

67-24

OTIS ELEVATOR COMPANY



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Quincy, Ill.

Buffalo, N. Y.

HAWAIIAN ISLANDS

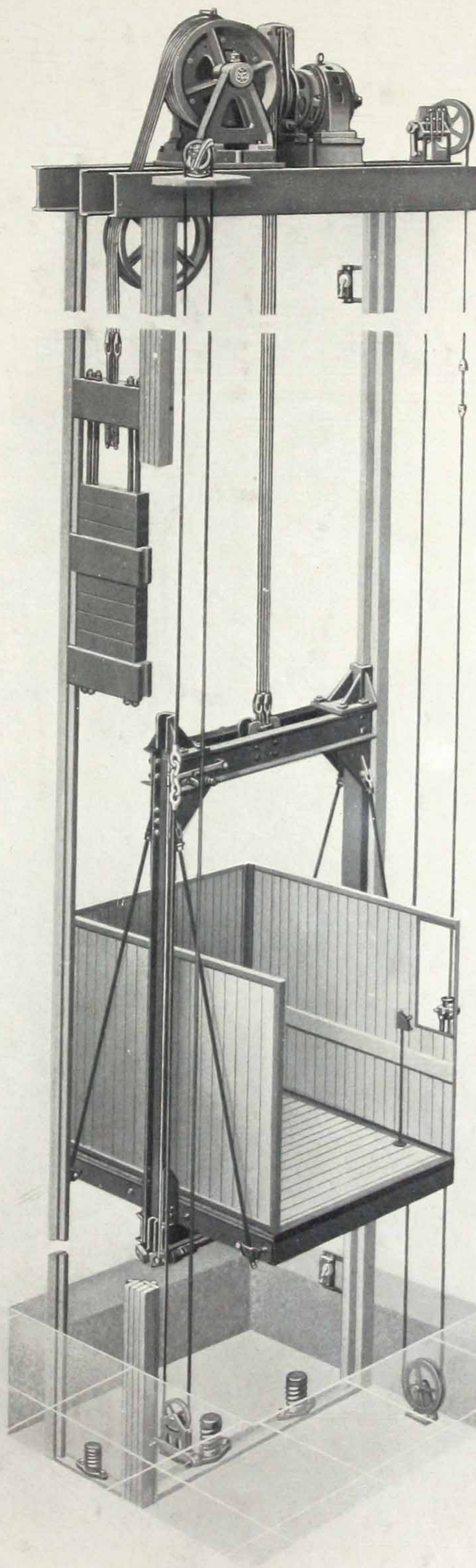
Von Hamm-Young Co., Ltd., Honolulu

FORM A 500 (REV. 4-22)
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A.I.A. CLASS 33



Otis Geared Freight Elevator

Single Wrap Traction



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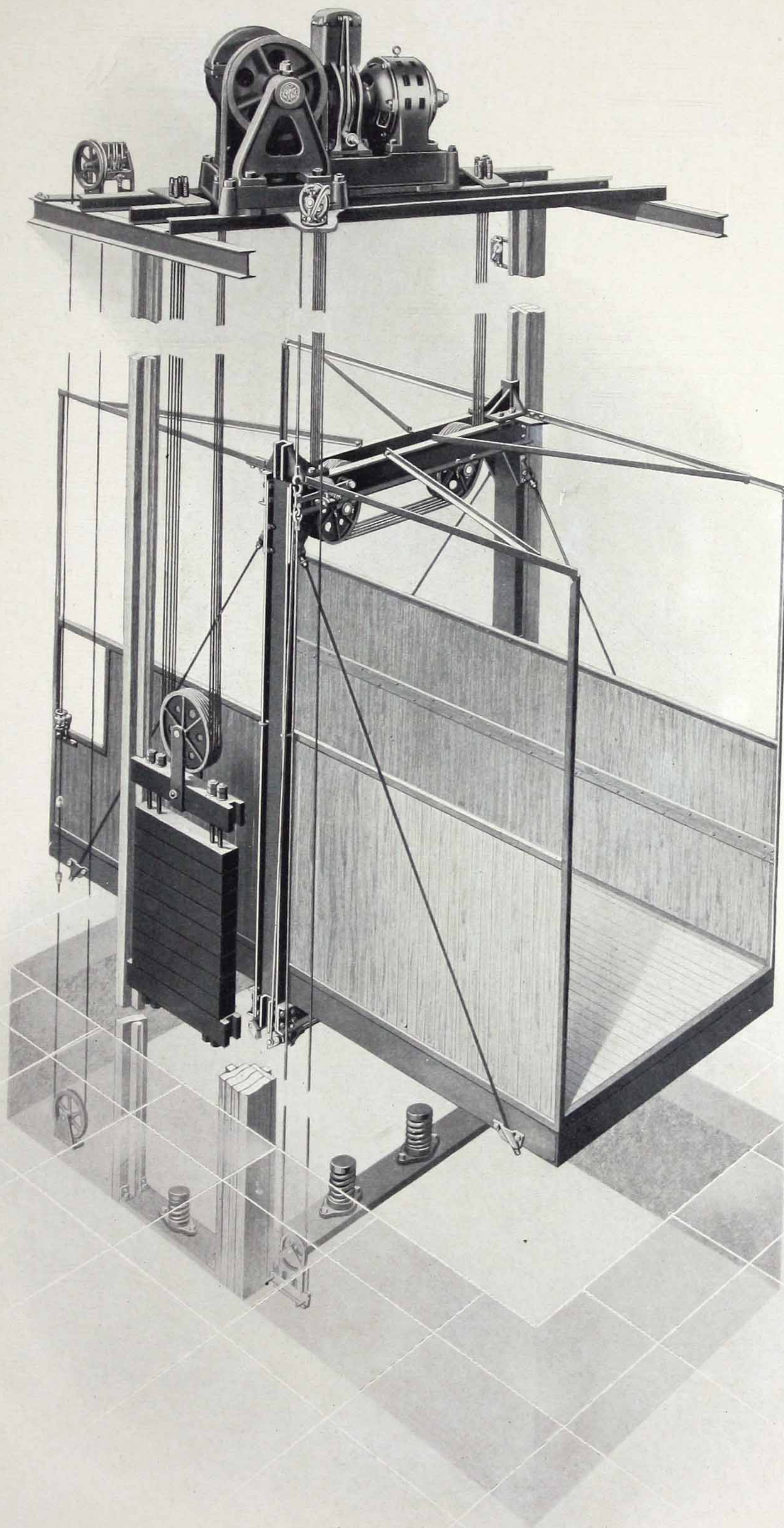


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Otis Geared Garage Elevator

Single Wrap Traction



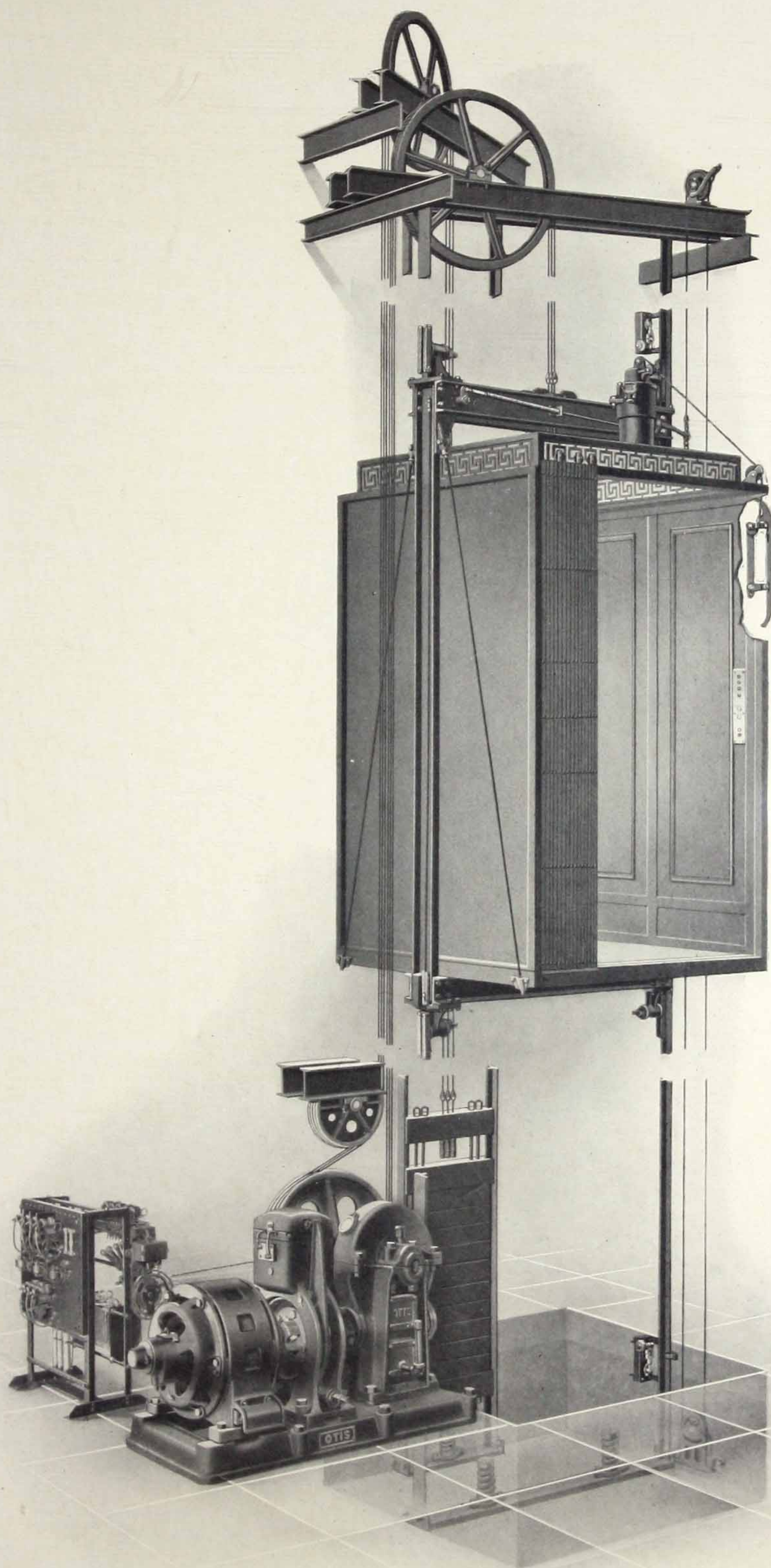
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Otis Geared Push Button Elevator

Single Wrap Traction



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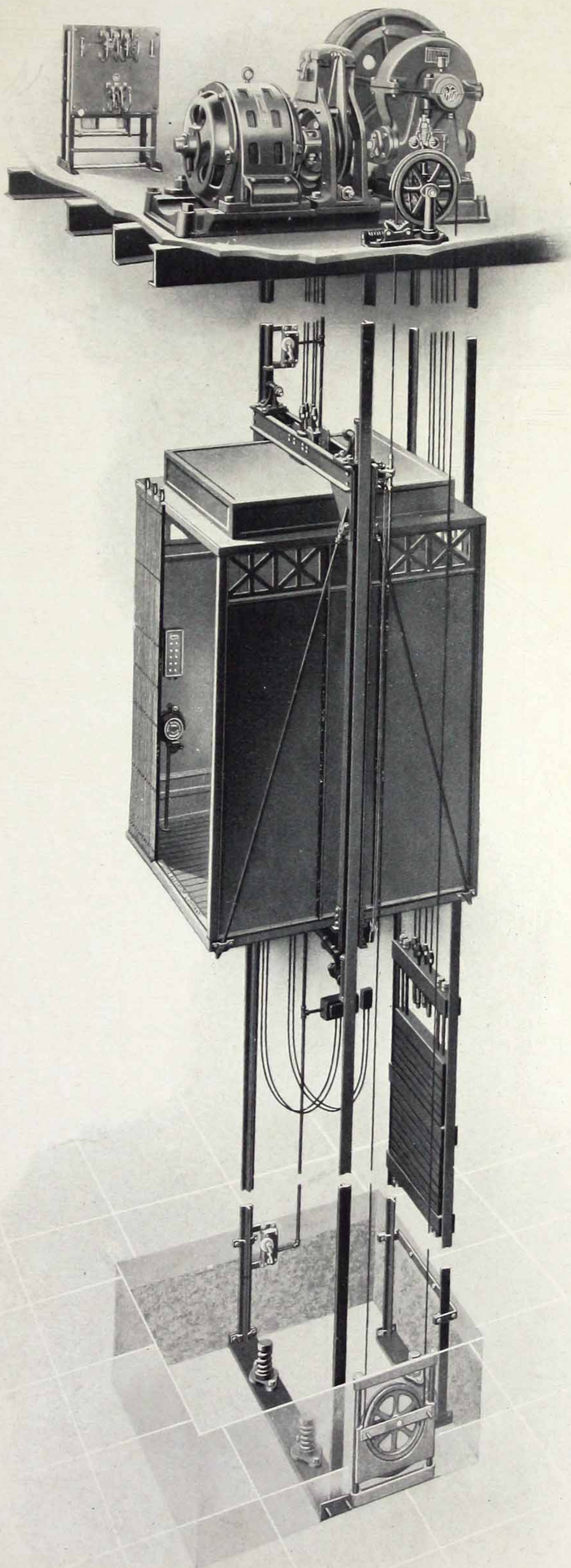


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Otis Geared Passenger Elevator

Single Wrap Traction



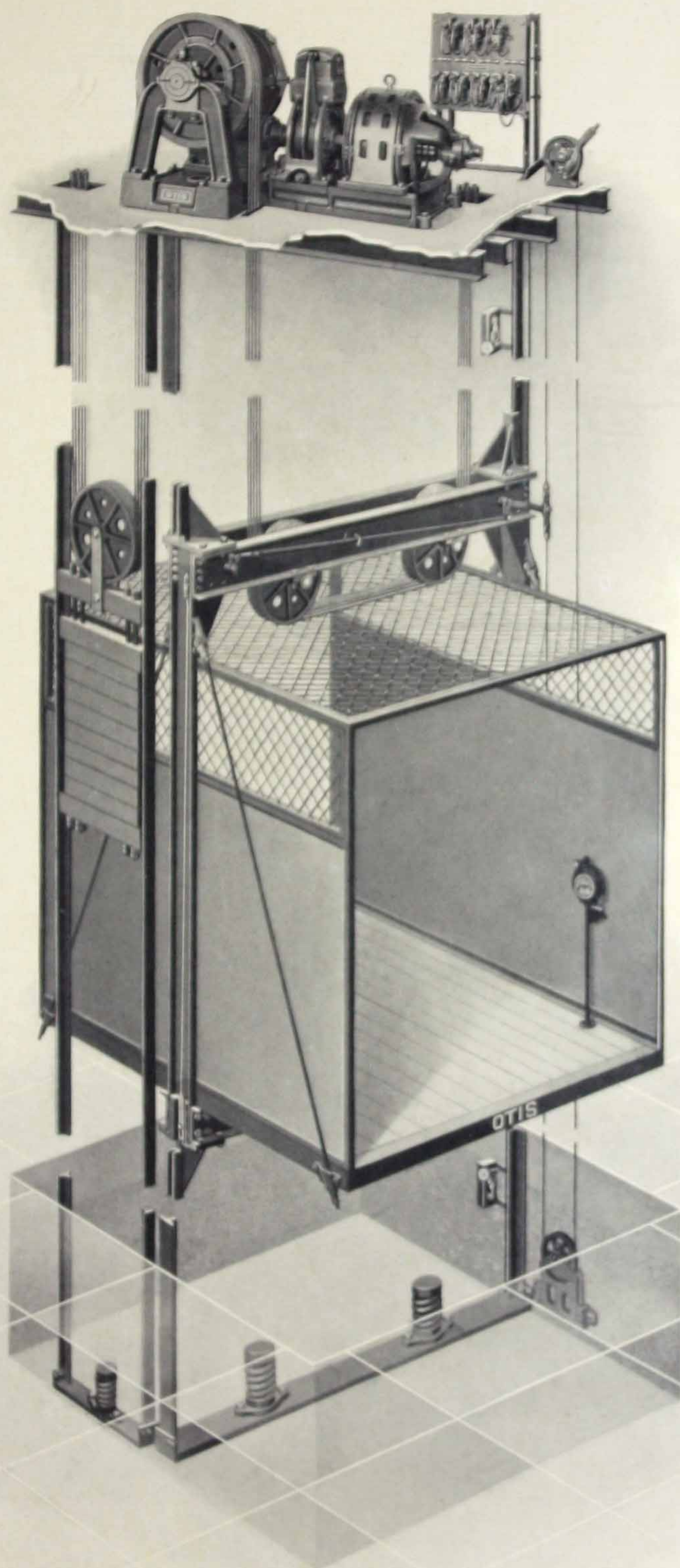
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Otis Geared Freight Elevator

Single Wrap Traction



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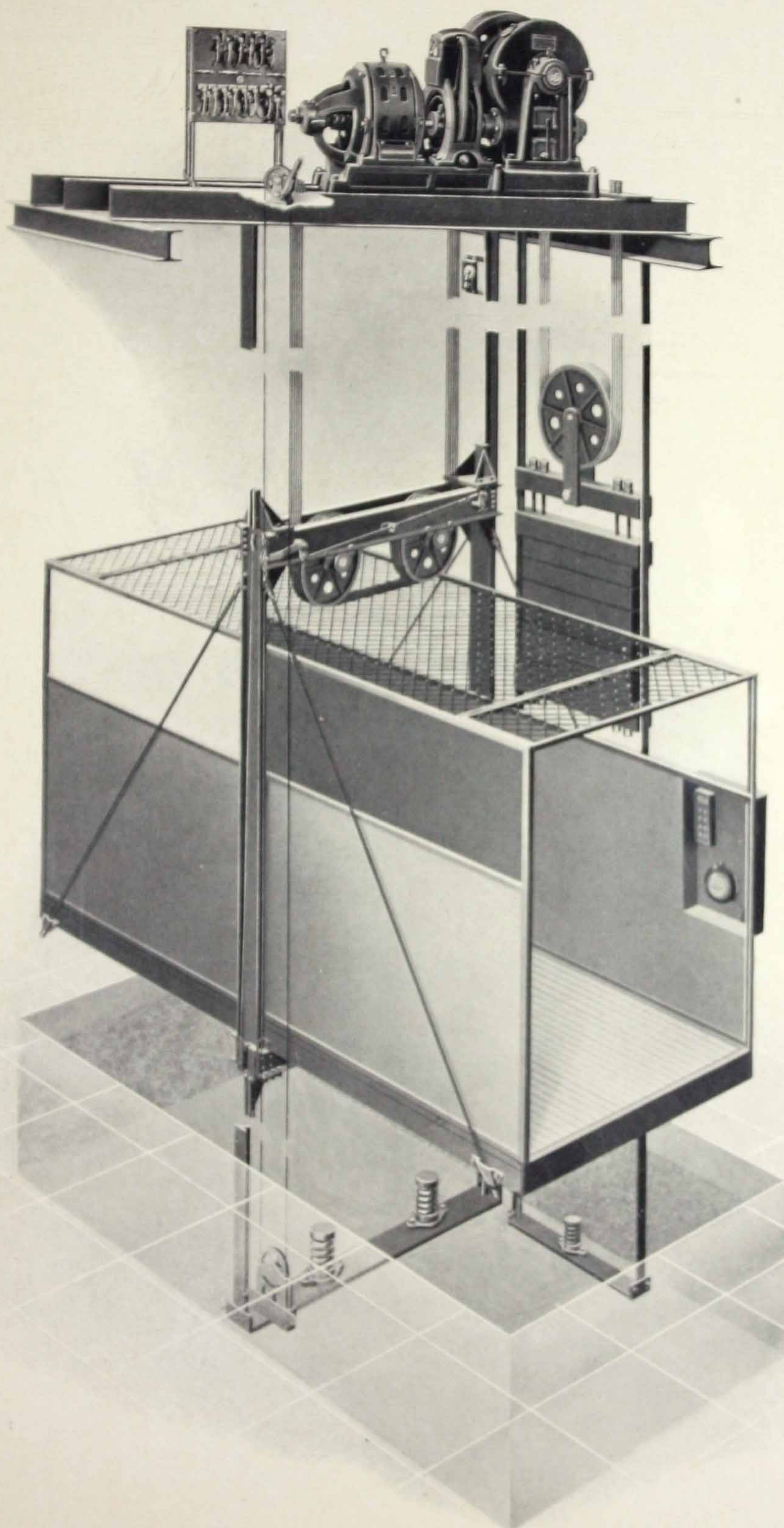


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Otis Geared Garage Elevator

Single Wrap Traction



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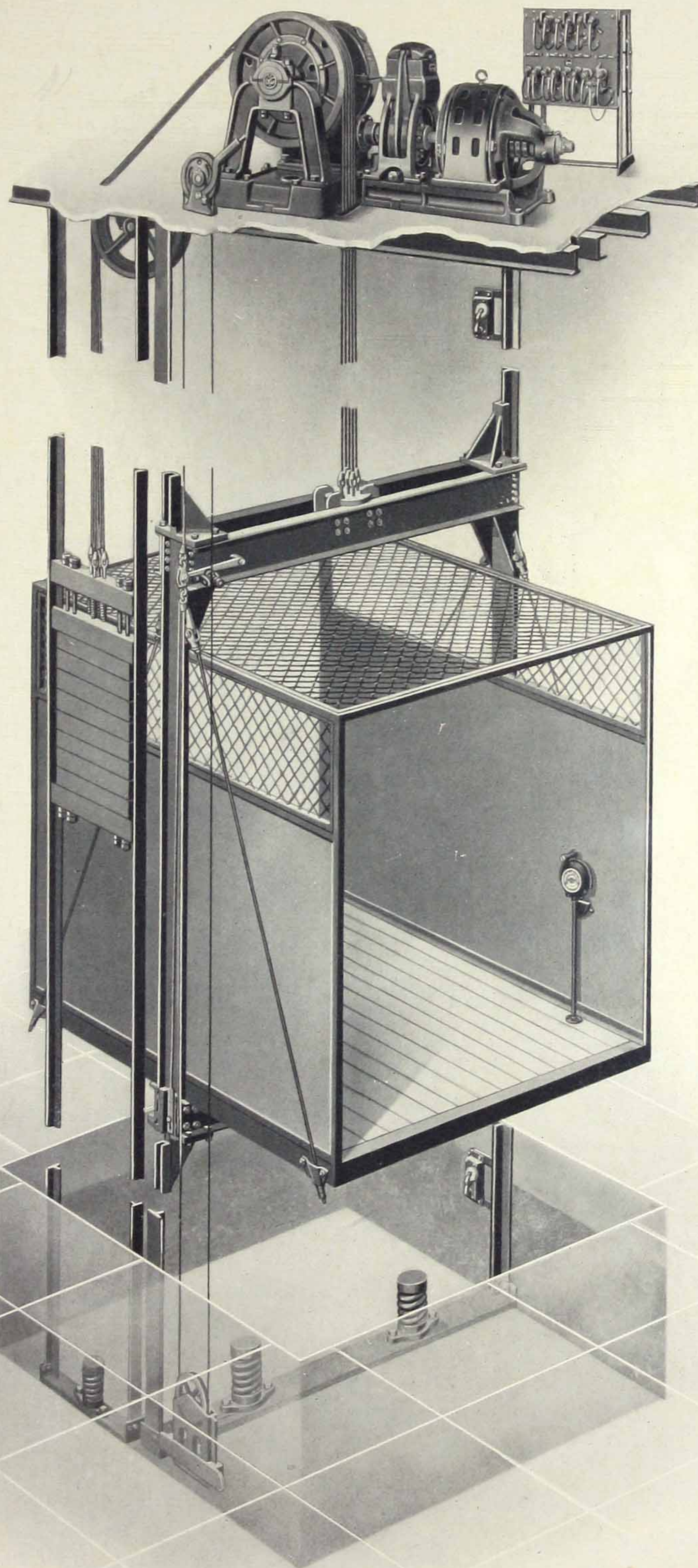


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Otis Geared Freight Elevator

Single Wrap Traction



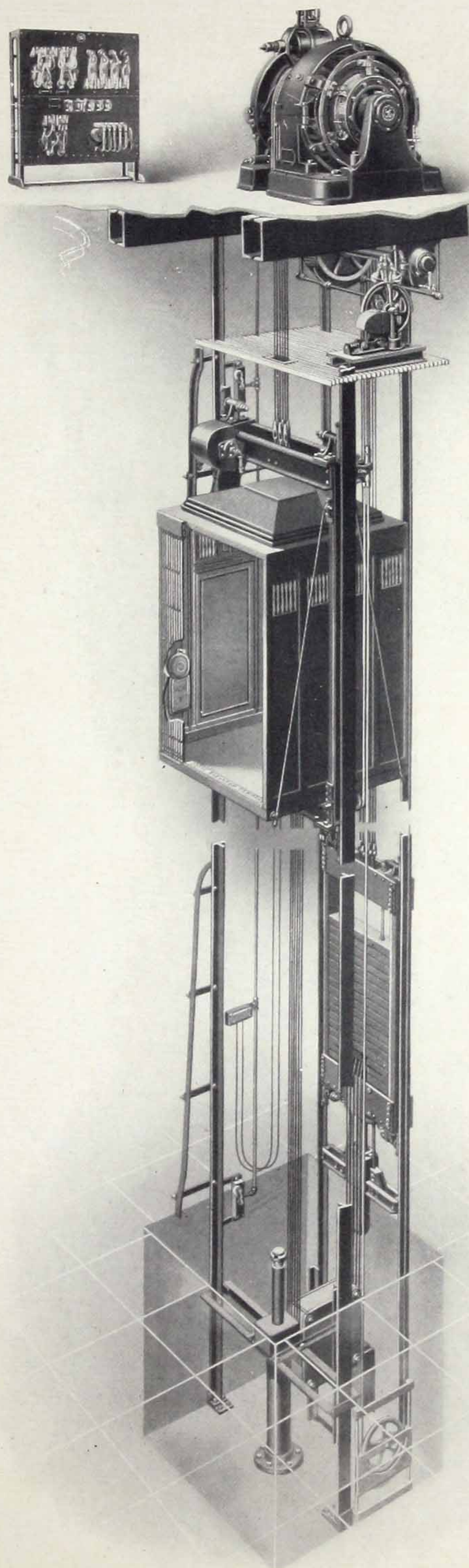
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Otis Gearless Traction Passenger Elevator



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Otis Gearless Traction Micro-Drive Passenger Elevator

Multi-Voltage Control



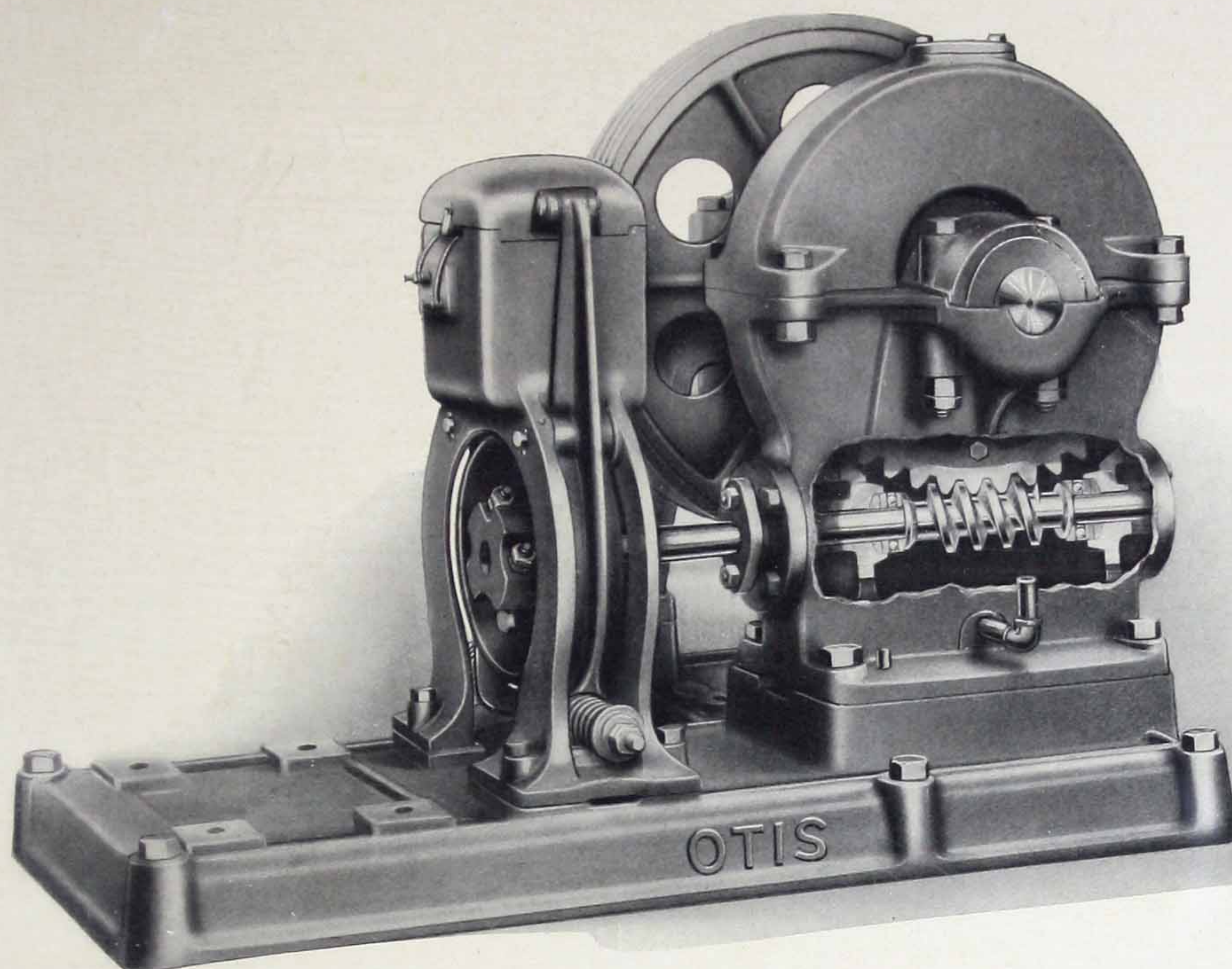
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Otis Single Wrap Traction Machine



The Single Wrap Traction Type of machine consists of traction driving sheave, worm and gear, oil tight housing, electric brake and motor. In order to maintain proper alignment all parts are mounted on a heavy continuous cast iron bed plate, provided with stiffening ribs.

The Traction Driving Sheave is made of semi-steel, the cables passing around the sheave in machined grooves specially designed to obtain proper traction, and with minimum wear on the hoisting ropes. The sheave is mounted between bearings on a solid forged steel shaft and is driven directly from the worm gear through a spider, which is securely bolted to both the worm gear and sheave, thereby relieving the shaft of torsional stresses.

The Worm Gear is made of a special grade of phosphor bronze accurately machined with hobbled teeth, designed to produce smoothness of operation, eliminate vibration and give highest possible efficiency. The worm is cut from a solid, high carbon steel forging integral with worm shaft, and is accurately cut and machined. The thrusts in both directions are taken up by special Otis designed, ball thrust bearings of the self-aligning type.

The Worm, Gear and Thrusts run in oil, in an oil tight housing, which is made of cast iron, strongly built to maintain perfect alignment of worm and gear, and to withstand the severe stresses to which it is subjected.

Babbitted Bearings of ample size are provided for the shaft and are equipped with suitable means for lubrication.

A combination coupling and brake pulley of large diameter is mounted on the worm shaft, and is provided with powerful spring actuated, electrically released brake shoes, which are applied simultaneously with equal pressure on both sides of the brake pulley. The brake is so arranged that it is automatically applied when the car is being brought to rest, or upon failure of current from any other cause.

The machine, motor, controller and electric brake are Otis designed and manufactured in Otis factories. They are specially designed to function together as a unit, producing the highest possible efficiency and smoothness of operation without any appreciable vibration or undue noise. All parts are proportioned for strength, rigidity and wear, and are made inter-changeable for ready replacement.

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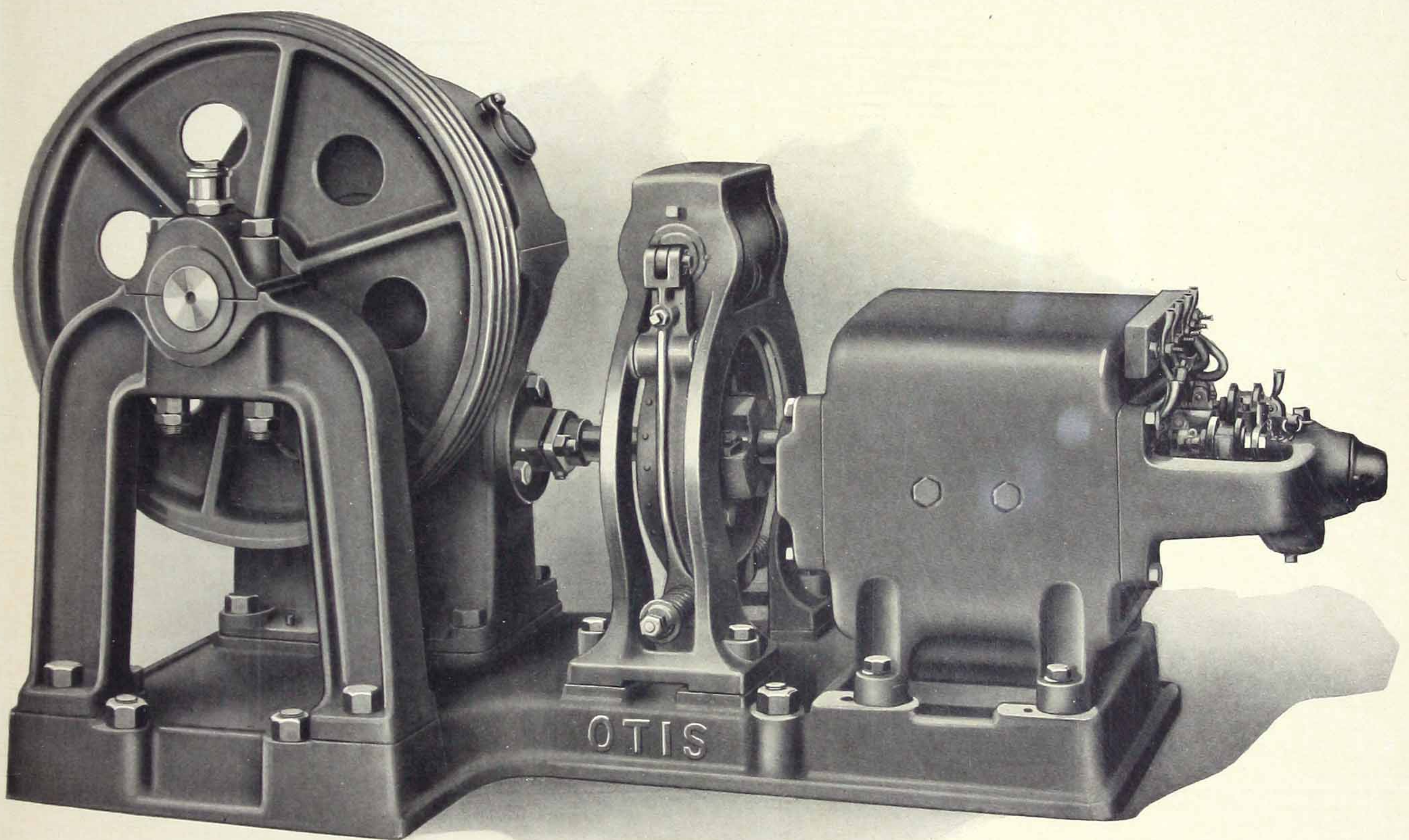


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Otis Machine

Direct Current Motor



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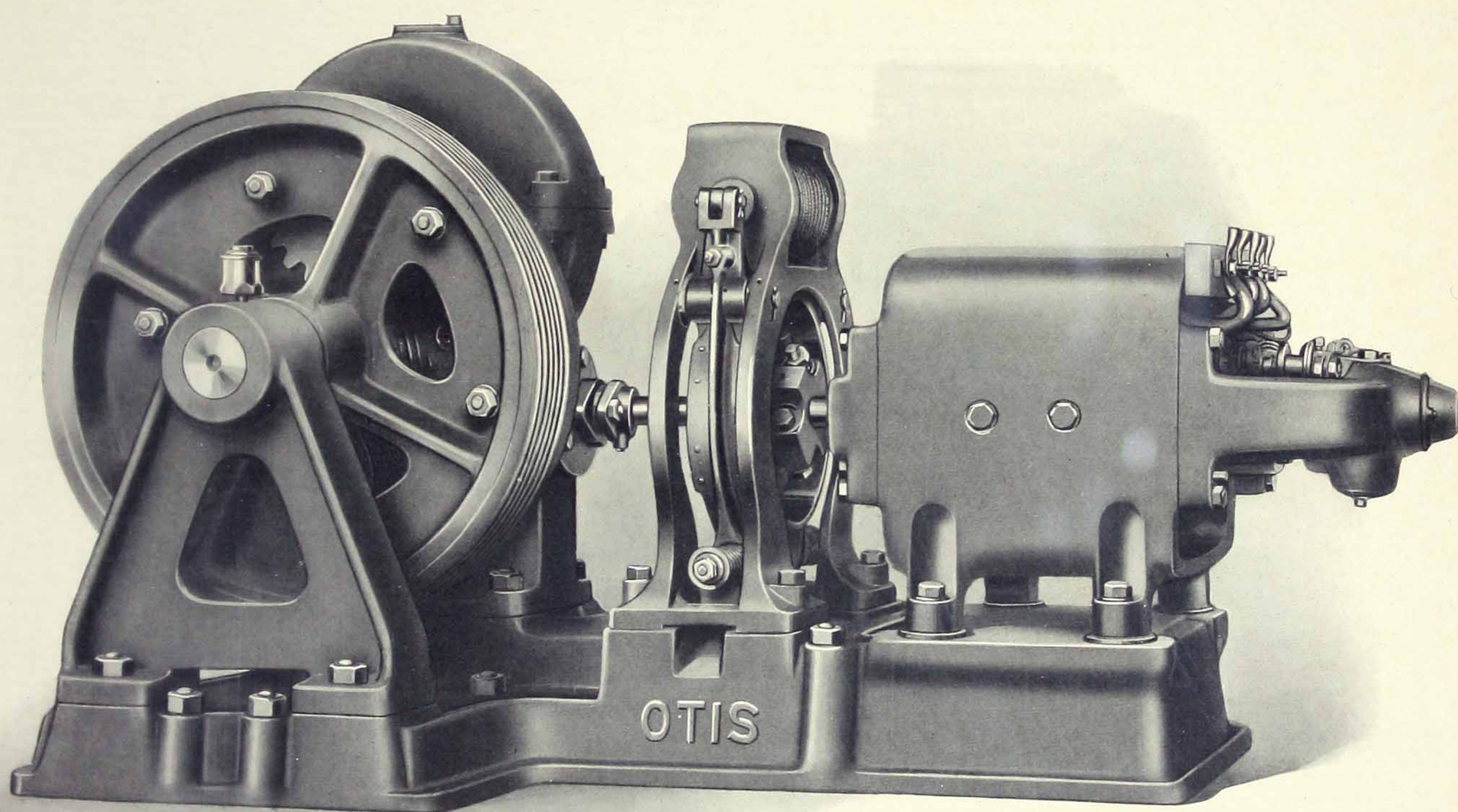


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Otis Machine

Direct Current Motor



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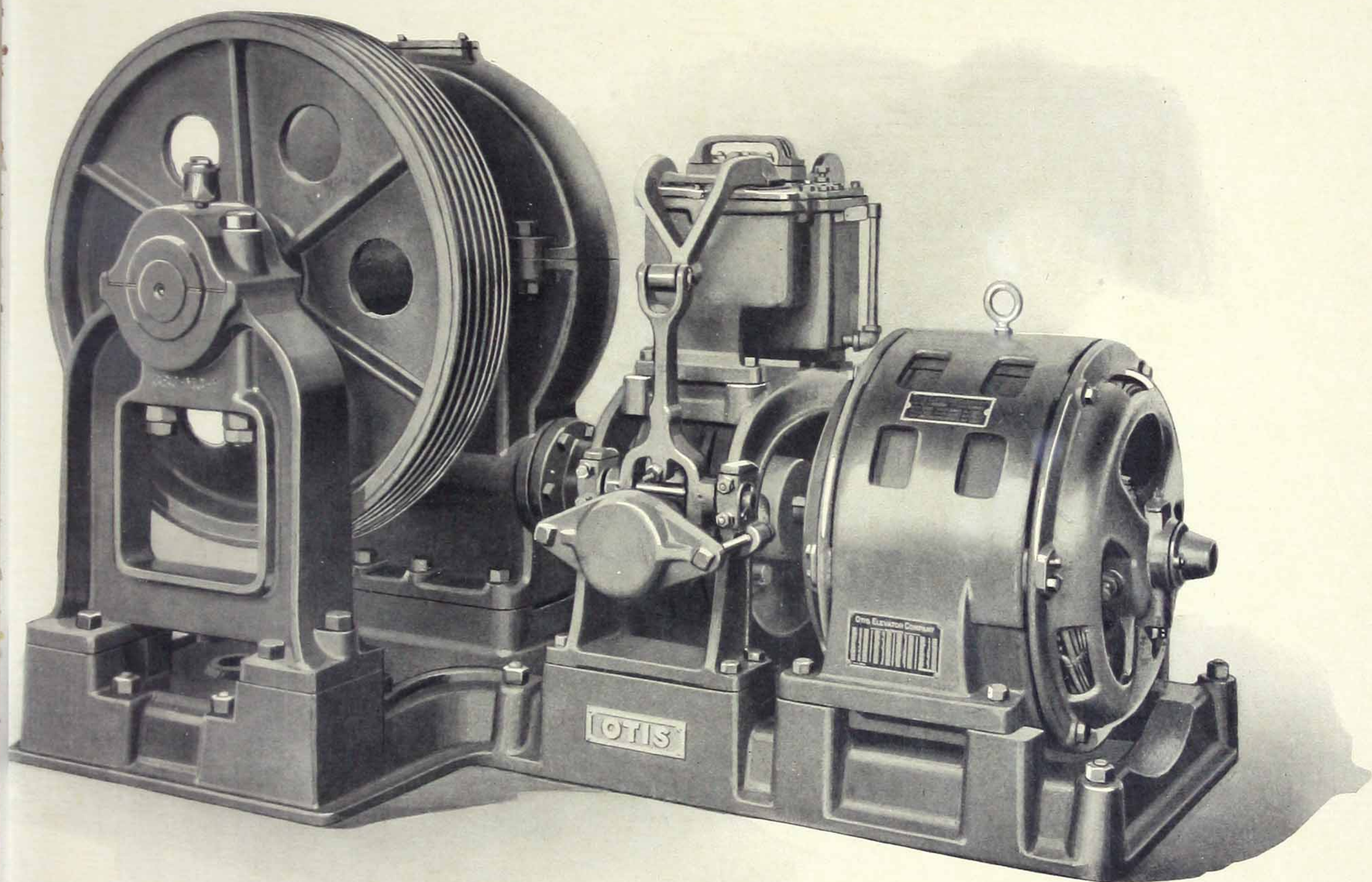


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Otis Machine

Internal Resistance Induction Motor
Two Speed



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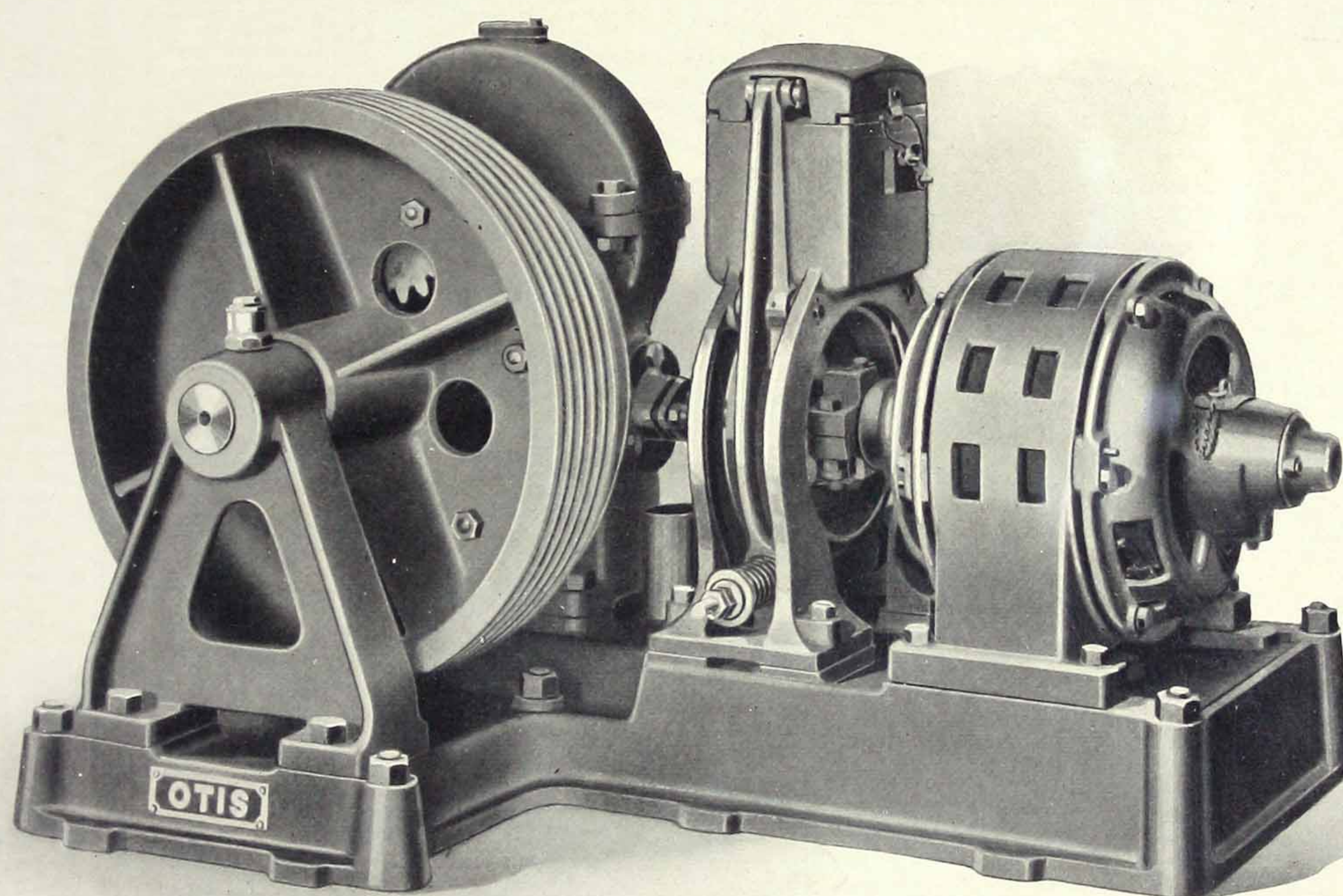


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Otis Machine

Internal Resistance Induction Motor
Single Speed



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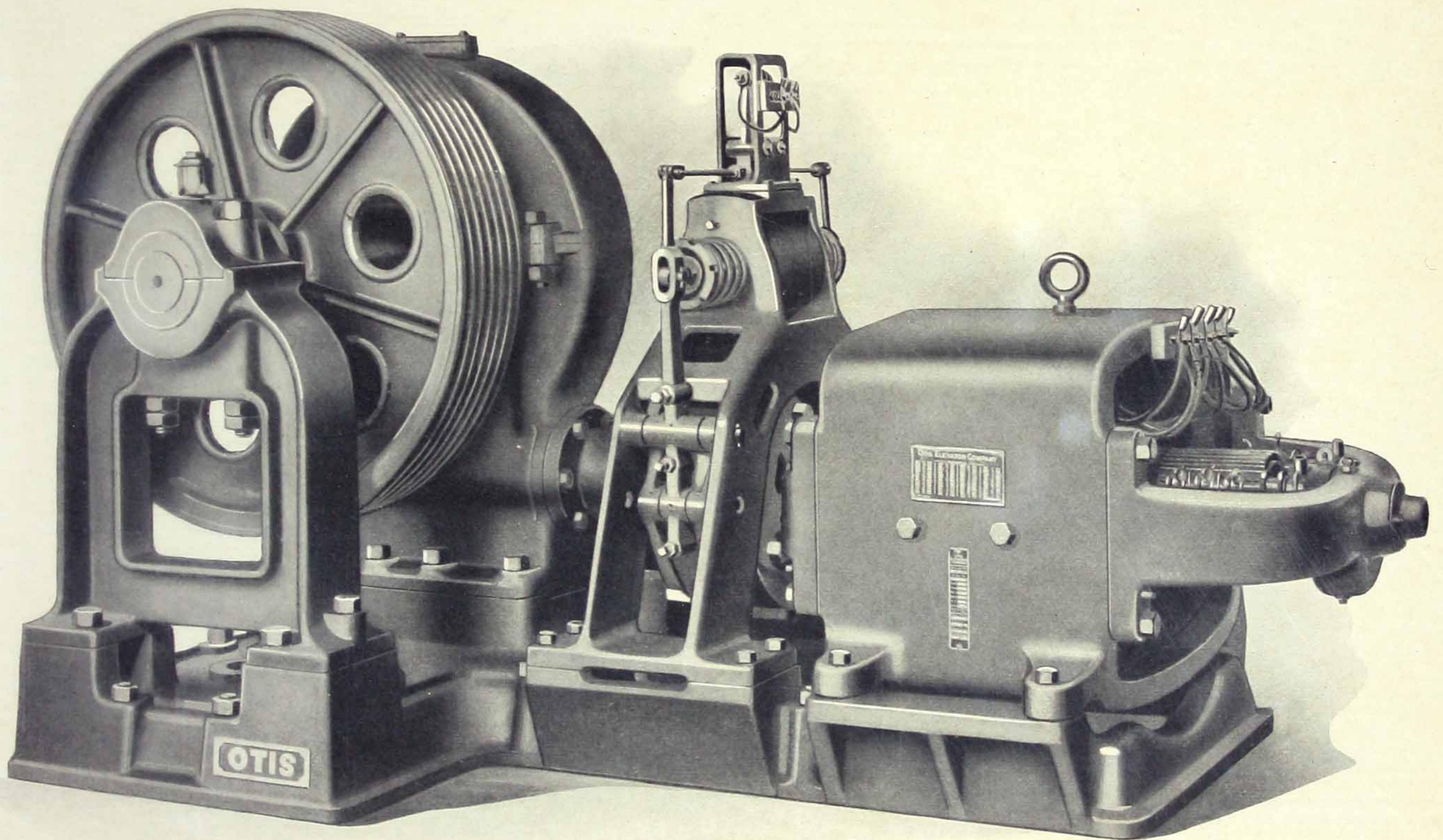


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Otis Machine

Direct Current Motor



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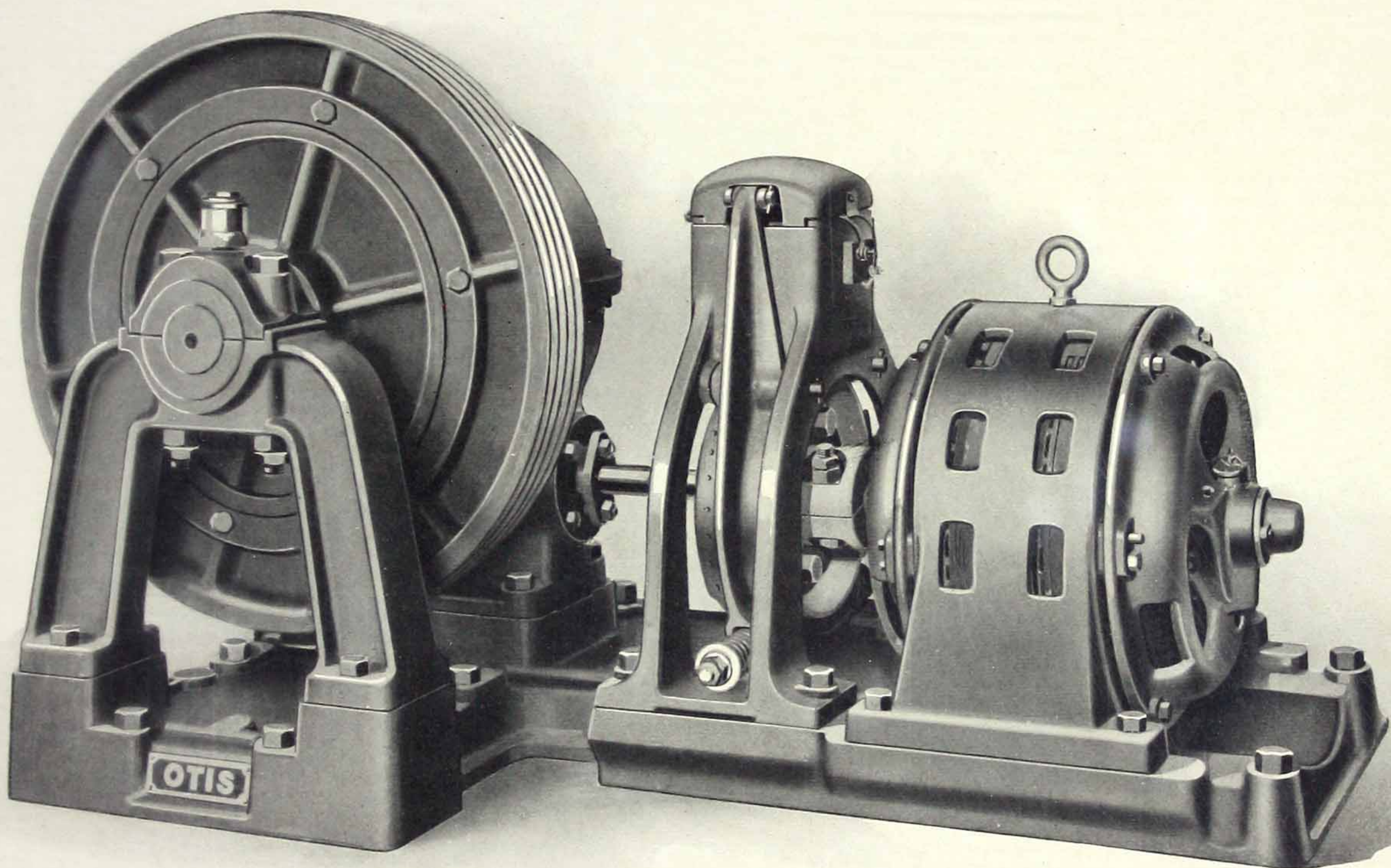


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Otis Machine

Internal Resistance Induction Motor
Single Speed



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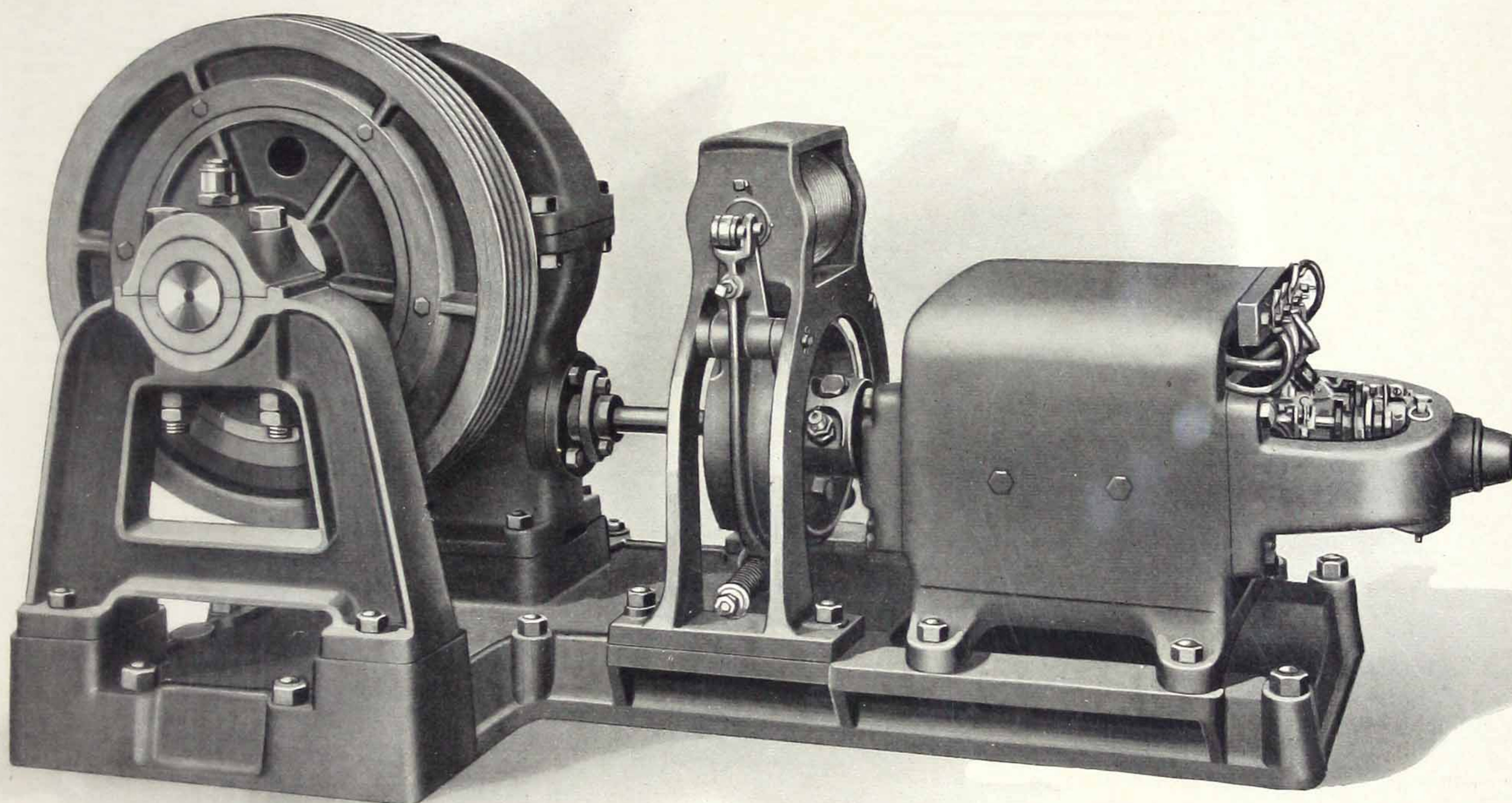


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Otis Machine

Direct Current Motor



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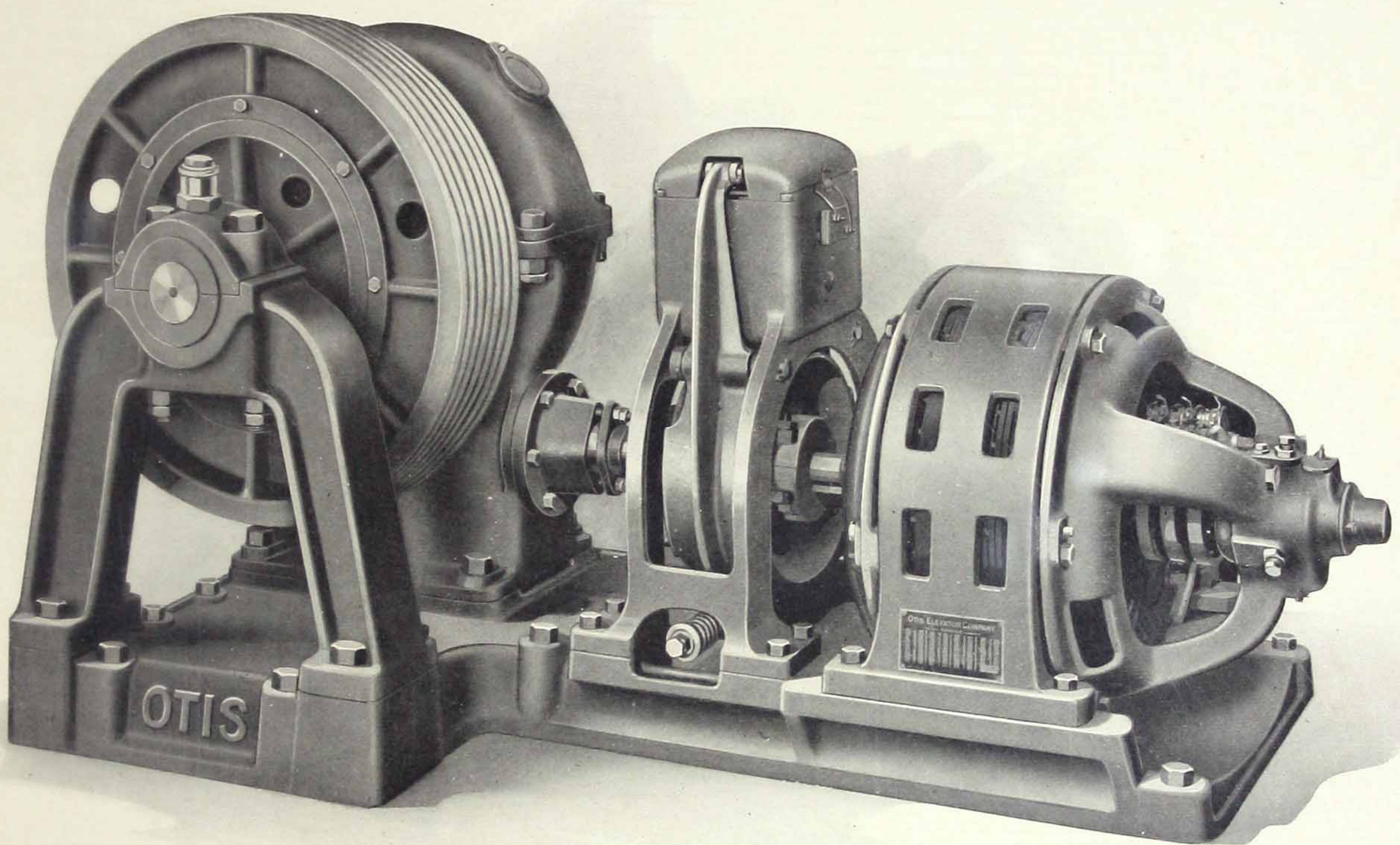


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Otis Machine

Slip Ring Induction Motor



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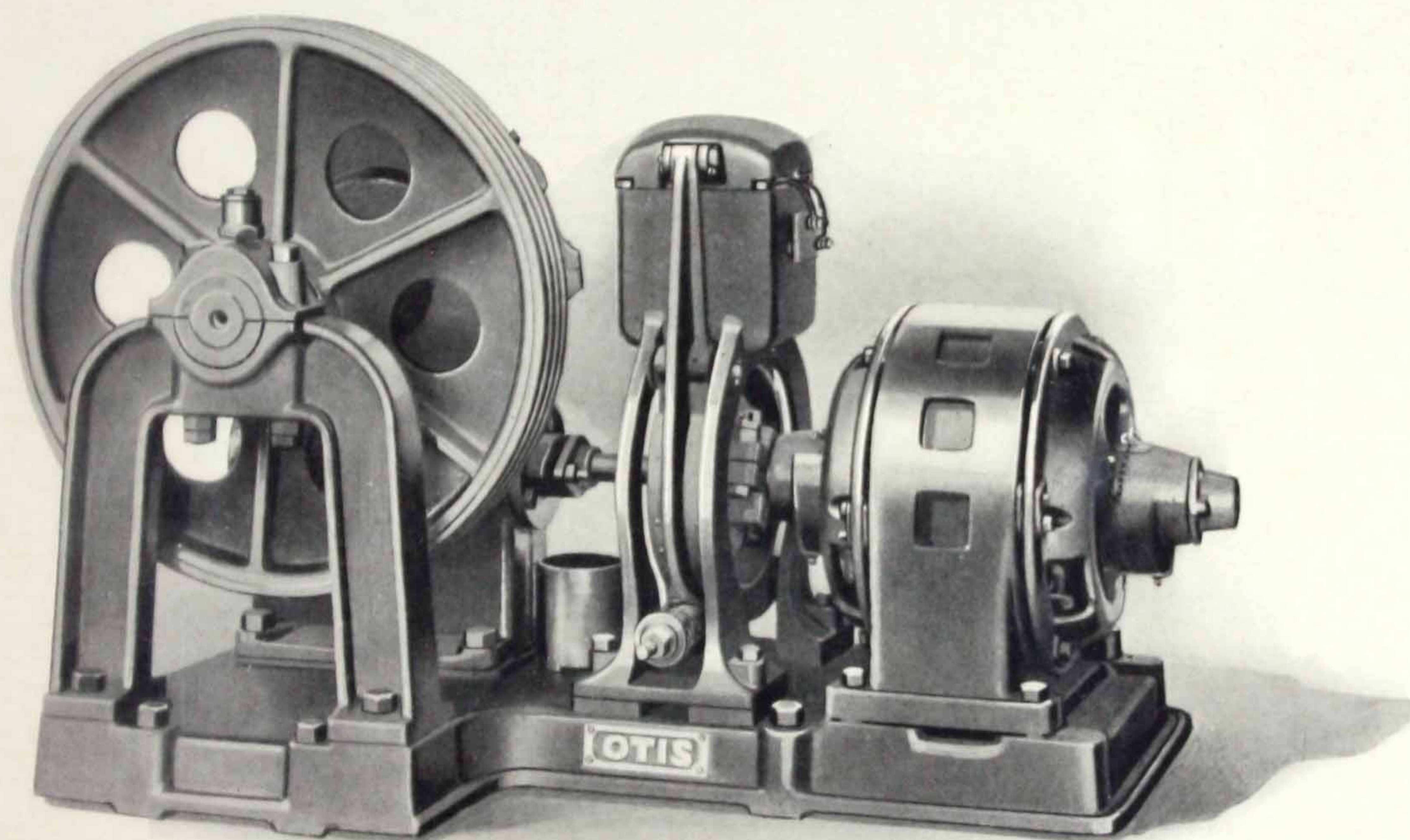


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Otis Machine

Internal Resistance Induction Motor
Single Speed



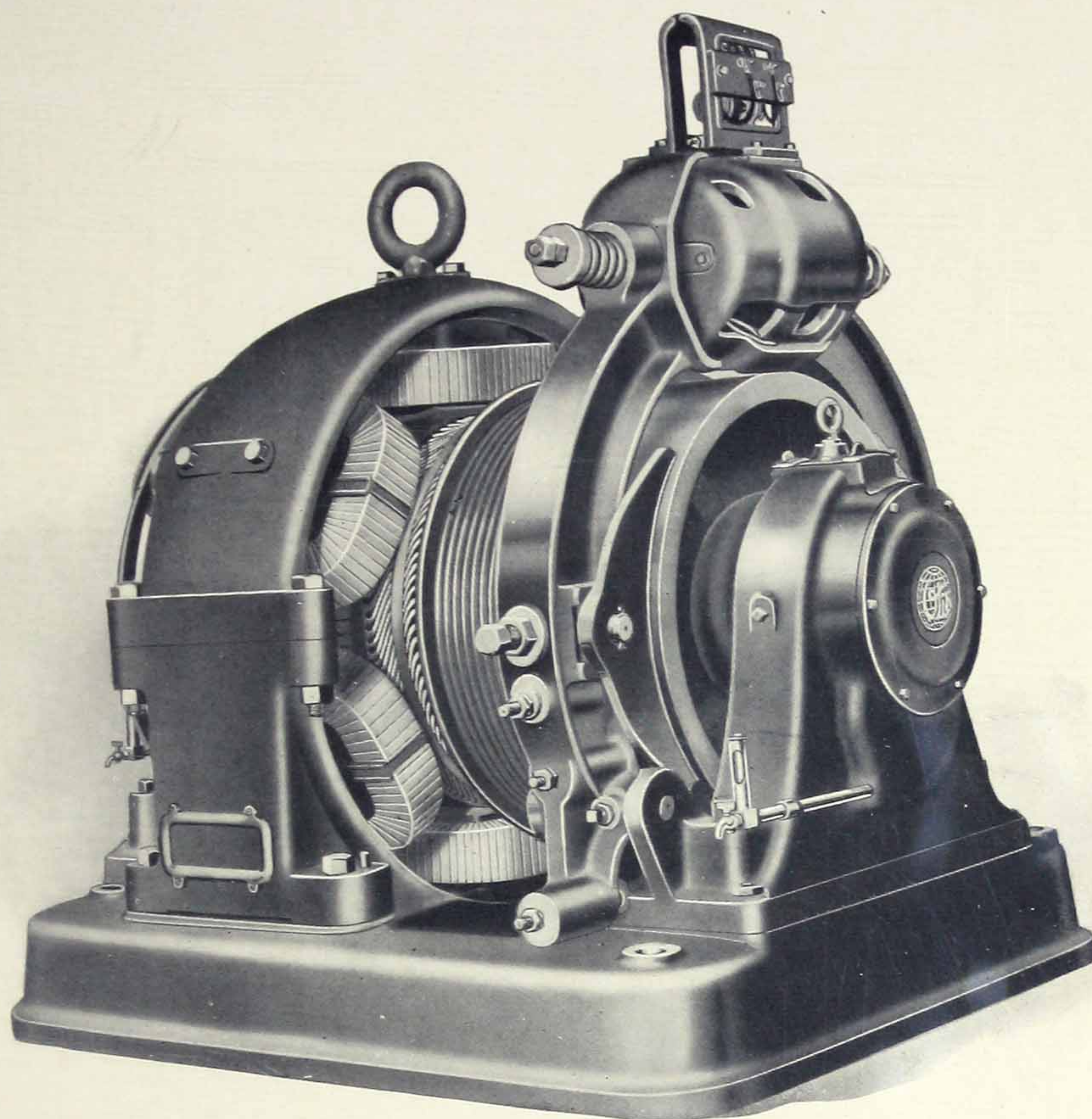
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OTIS GEARLESS TRACTION MACHINE



The OTIS Gearless Traction Machine consists of traction driving sheave, extremely slow speed motor, and electric brake.

In order to maintain proper alignment, all parts are mounted on a heavy continuous cast iron bed plate, provided with stiffening ribs.

Direct drive is obtained from the armature of the main motor through a traction driving sheave, eliminating all intermediate gear reduction between the motor and the car.

The traction driving sheave of large diameter is made of the best grade of semi-steel, is accurately turned, and provided with grooves of special design to maintain continually constant traction and with minimum wear on the hoisting ropes. The sheave is mounted directly on, and securely bolted to, the armature spider, which is integral with the armature shaft.

The characteristics of the machine, in conjunction with the system of drive, produce exceptionally high efficiency, absence of vibration, minimum wear, and economy of operation. An *inherent safety feature of the traction drive* is the reduction of the tractive effort upon the bottoming of the car or counterweight, which eliminates the possibility of either of these being drawn into the overhead work.

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All bearings are amply proportioned, provided with large bearing surfaces, and equipped with suitable means for proper lubrication.

The bearings are of the self-aligning type, with babbitted linings, provided with dust covers and with chains for automatic lubrication.

A spring-actuated, electrically released brake of a powerful type is provided to hold the car securely with maximum load.

The brake wheel is mounted on, and bolted directly to, the armature spider. Swivel brake shoes are applied to the brake wheel simultaneously, and with equal pressure, by means of a pair of powerful helical springs. The brake magnet is designed for quick release, and is arranged with adjustable, automatically controlled, magnetic retardation, for the purpose of obtaining smooth and gradual application of the brake shoes.

All exposed cast surfaces are filled and rubbed down, and have uniform semi-gloss rubber finish. The entire equipment is finished in a neat and distinctive manner.

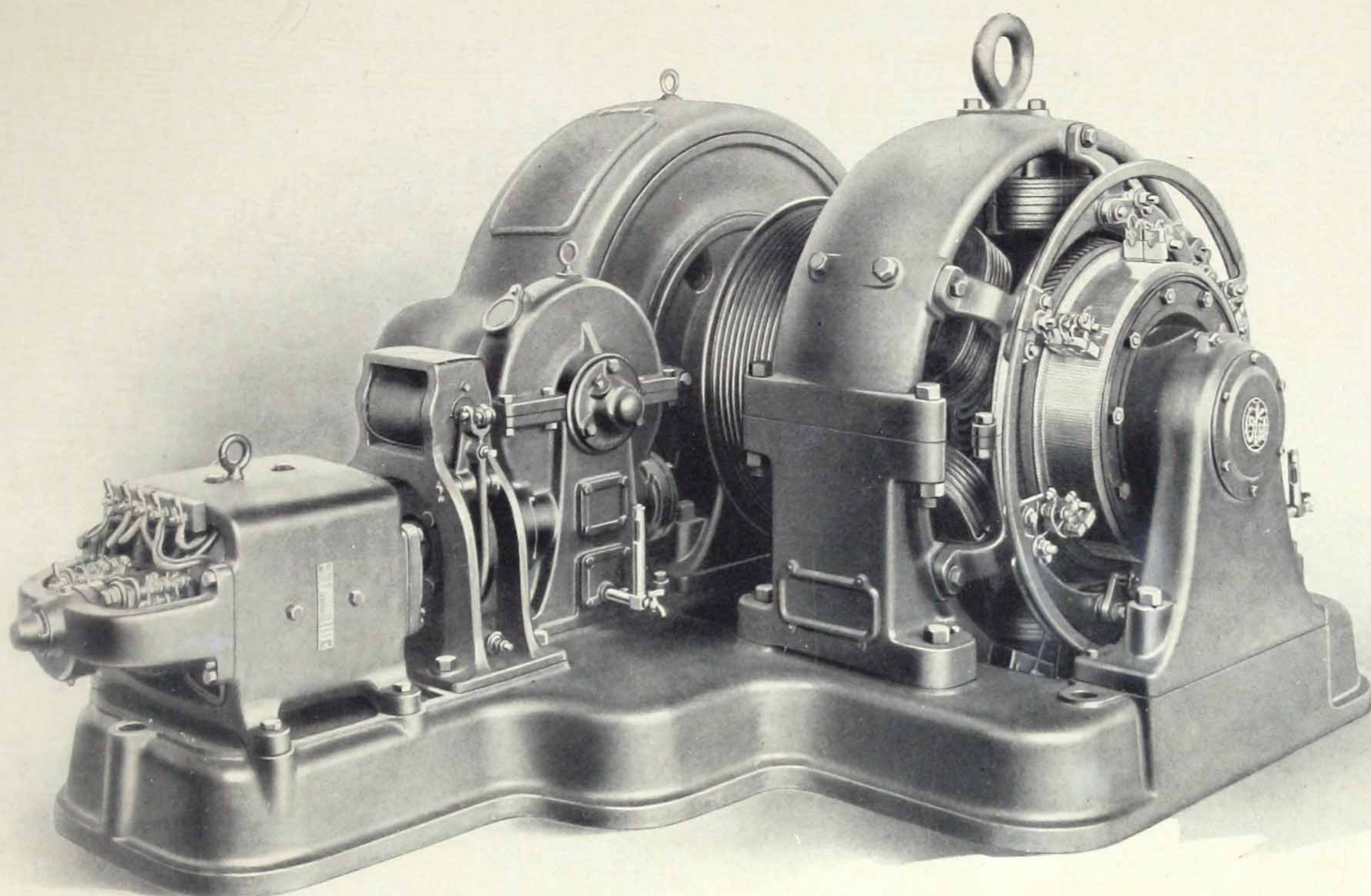
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OTIS GEARLESS TRACTION MICRO-DRIVE MACHINE



THE OTIS Gearless Traction Micro-Drive Machine consists of traction driving sheave, extremely slow speed main motor, self-leveling *Micro-Drive* motor, main and leveling electric brakes and auxiliary worm and gear for leveling operation.

In order to maintain proper alignment, all parts are mounted on a heavy continuous cast iron bed plate, provided with stiffening ribs.

Direct drive is obtained from the armature of the main motor through a traction driving sheave, eliminating all intermediate gear reduction between the motor and the car.

The traction driving sheave of large diameter, is made of the best grade of semi-steel, is accurately turned and provided with grooves of special design to continually maintain constant traction and with minimum wear on the hoisting ropes. The sheave is mounted directly on, and securely bolted to, the armature spider which is integral with the armature shaft.

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The characteristics of the machine, in conjunction with the system of drive, produces exceptionally high efficiency, absence of vibration, minimum wear and economy of operation. An *inherent Safety Feature of the Traction Drive* is the reduction of the tractive effort upon the bottoming of the car or counterweight, which eliminates the possibility of either of these being drawn into the overhead work.

All bearings are amply proportioned, provided with large bearing surfaces, and with suitable means for proper lubrication.

The main bearings are of the self-aligning type, with babbitted linings, provided with dust covers, and with chains for automatic lubrication. The leveling motor bearings are self-aligning, with bronze bushings.

Spring actuated, electrically released brakes of a powerful type are provided to hold the car securely with maximum load.

The main brake wheel is mounted on, and bolted directly to, the armature spider. Swivel brake shoes are applied to the brake wheel simultaneously, and with equal pressure by means of a pair of powerful helical springs. The main brake magnet is designed for quick release, and is arranged with adjustable, automatically controlled, magnetic retardation, for the purpose of obtaining smooth and gradual application of the brake shoes.

All exposed cast surfaces are filled and rubbed down, and have uniform semi-gloss rubber finish. The entire equipment is finished in a neat and distinctive manner.

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Otis Single Wrap Traction

Micro-Drive Machine

The Otis Single Wrap Traction Micro-Drive Machine consists of a traction driving sheave, main drive, self-leveling micro-drive, main and self-leveling motors, electric brakes and gearing. The entire machine is designed as a complete unit, and is mounted on a heavy, re-enforced cast iron bed plate to maintain all parts in proper alignment.

The traction driving sheave is made of semi-steel, the ropes passing around the sheave in machined grooves specially designed to obtain proper traction, and with minimum wear on the hoisting ropes. The sheave is mounted between bearings on a solid steel shaft and is driven directly from the worm gear through a spider, which is securely bolted to both the worm gear and sheave, thereby relieving the shaft of torsional stresses.

The worm gears are made of a special grade of phosphor bronze, accurately machined with hobbled teeth, designed to produce smoothness of operation, eliminate vibration, and give highest possible efficiency. The worms are cut from solid, high carbon steel forgings integral with worm shafts, and are accurately cut and machined. The thrusts in both directions are taken up by special Otis designed, ball thrust bearings of the self-aligning type.

The worms, gears and thrusts run in oil, in oil tight housings, which are made of cast iron strongly built to withstand the severe stresses to which they are subjected, and to maintain perfect alignment of the worms and gears.

Babbitted bearings of ample size are provided for the shaft and are equipped with suitable means for lubrication.

The machine is provided with a main and a micro-drive electric brake, each of which is provided with a pair of powerful spring-actuated, electrically released brake shoes. The shoes of each brake are applied simultaneously, and exert equal pressure upon both sides of the brake pulley.

The main brake is of the revolving type, but during normal operation is in a fixed position with the micro-drive disconnected. During leveling operation the main brake revolves and automatically acts as a connection between the main and micro-drive. The micro-drive brake is effective during leveling operation.

The application of the main and micro-drive brakes is automatically governed by the operation of the controller. Either brake will hold the car securely with maximum load, and are so arranged that they will be automatically applied when the car is brought to rest, or upon failure of current from any cause.

The machine, motors, electric brakes, and controllers are Otis designed and manufactured in Otis factories. The entire machine is designed to meet the exacting requirements of self-leveling operation and is constructed as a complete unit. The design of the machine produces the highest possible efficiency and smoothness of operation, without any appreciable vibration or undue noise. All parts are proportioned for strength, rigidity and wear, and are made interchangeable for ready replacement.

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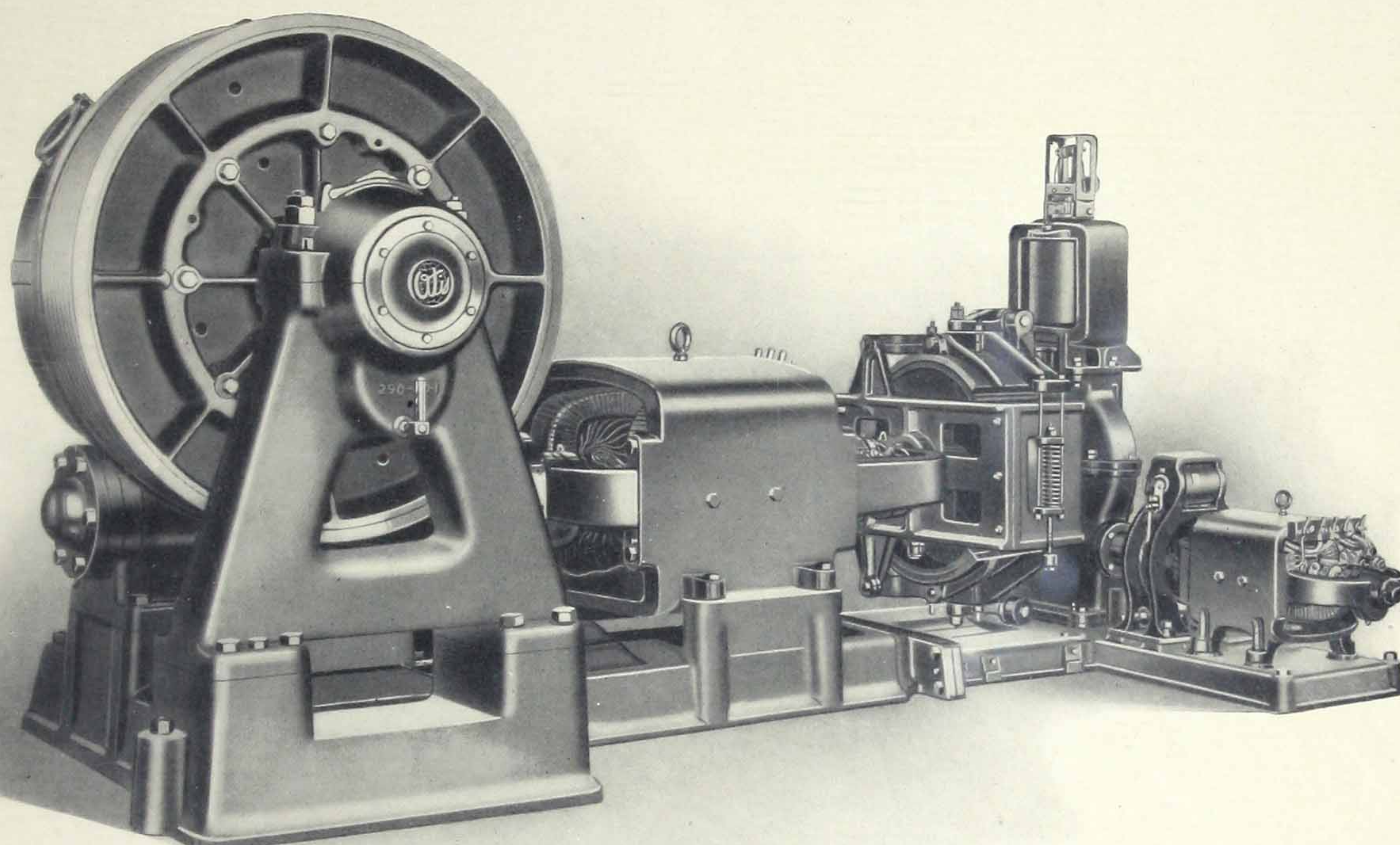


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Otis Micro-Drive Machine

Single Wrap Traction - Direct Current



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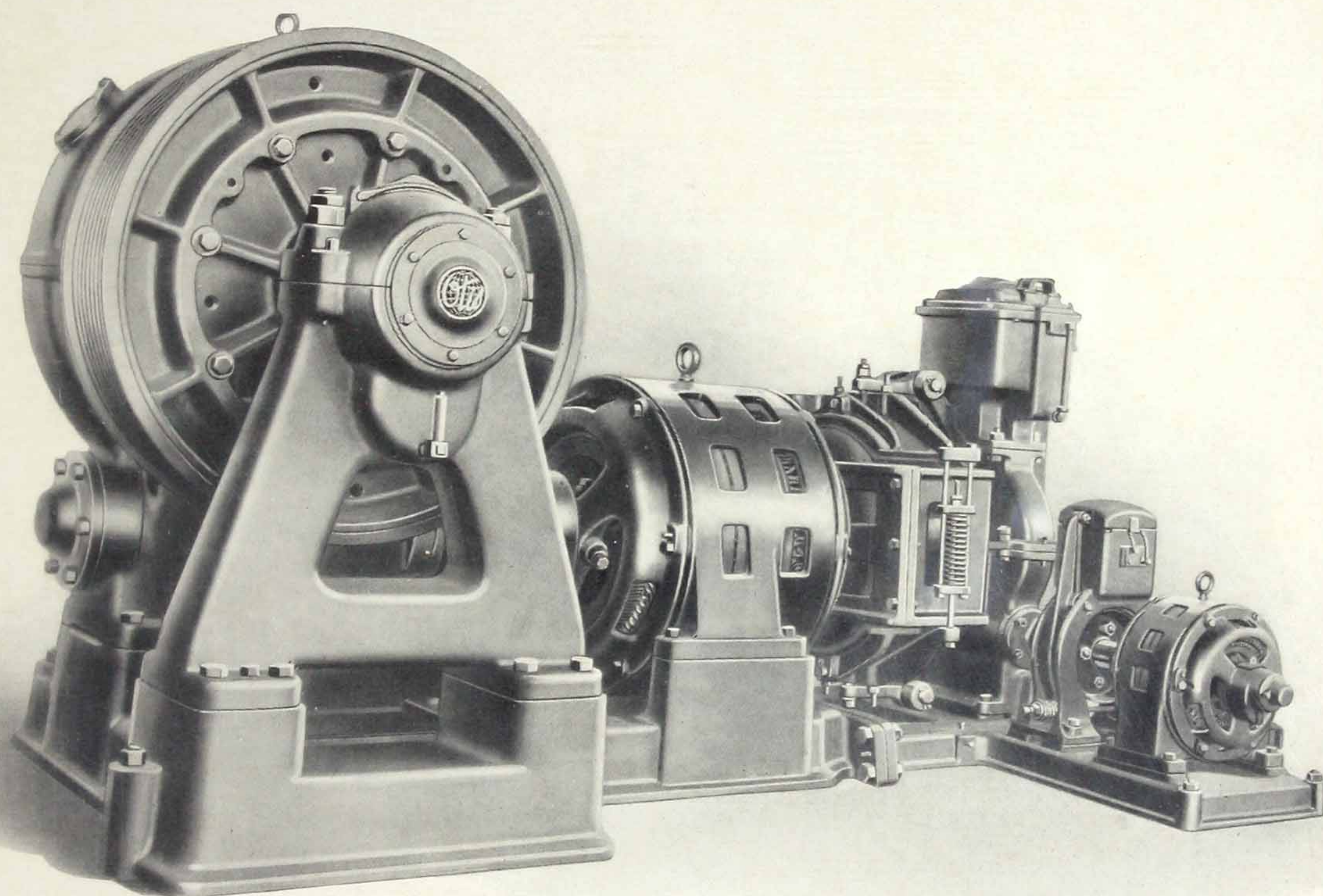


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Otis Micro-Drive Machine

Single Wrap Traction - Alternating Current



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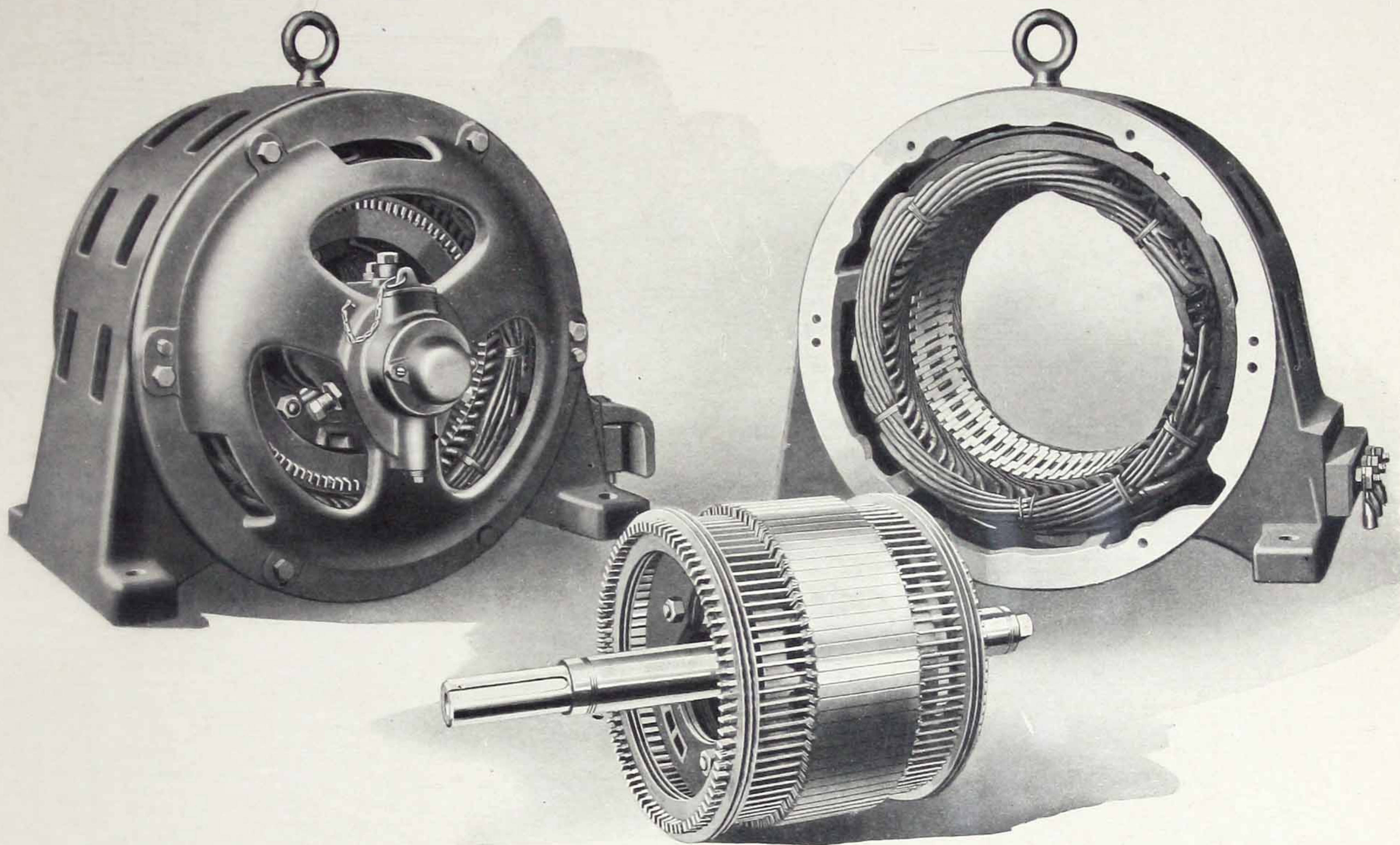


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Otis Internal Resistance Induction Motors

Single Speed - Alternating Current



OTIS Internal Resistance Induction Motors are OTIS designed and manufactured in OTIS factories. These motors are built to meet fully the exacting requirements of modern elevator service and develop high starting torque with low starting current. Particular effort to produce quiet operation has been made in the design. All parts are easily removable for replacement.

The rotor windings consist of copper bars, which project beyond the end connections of the stator coils and are welded to a number of short circuiting rings of special construction on each end of the rotor. Thus resulting in a rotor of practically indestructible construction, thereby eliminating all possibility of open circuits or breakdowns, due to heating from overloads or any other cause. The electrical features of this special type of end ring construction result in the elimination of excessive starting currents, which are usual with other motors of the Internal Resistance Type. Exceptionally good ventilation is obtained during operation from the fan construction of the copper bars at both ends of rotor, and when the motor is not running, by the arrangement of the end rings with their large radiating surfaces. The rotor is electrically and mechanically balanced, and laminations are made of special steel.

The motor is strongly and substantially built and is accurately machined. Stator windings are specially insulated. The bearings are self-aligning, adjustable, ample in size, and provided with lubricating oil rings.

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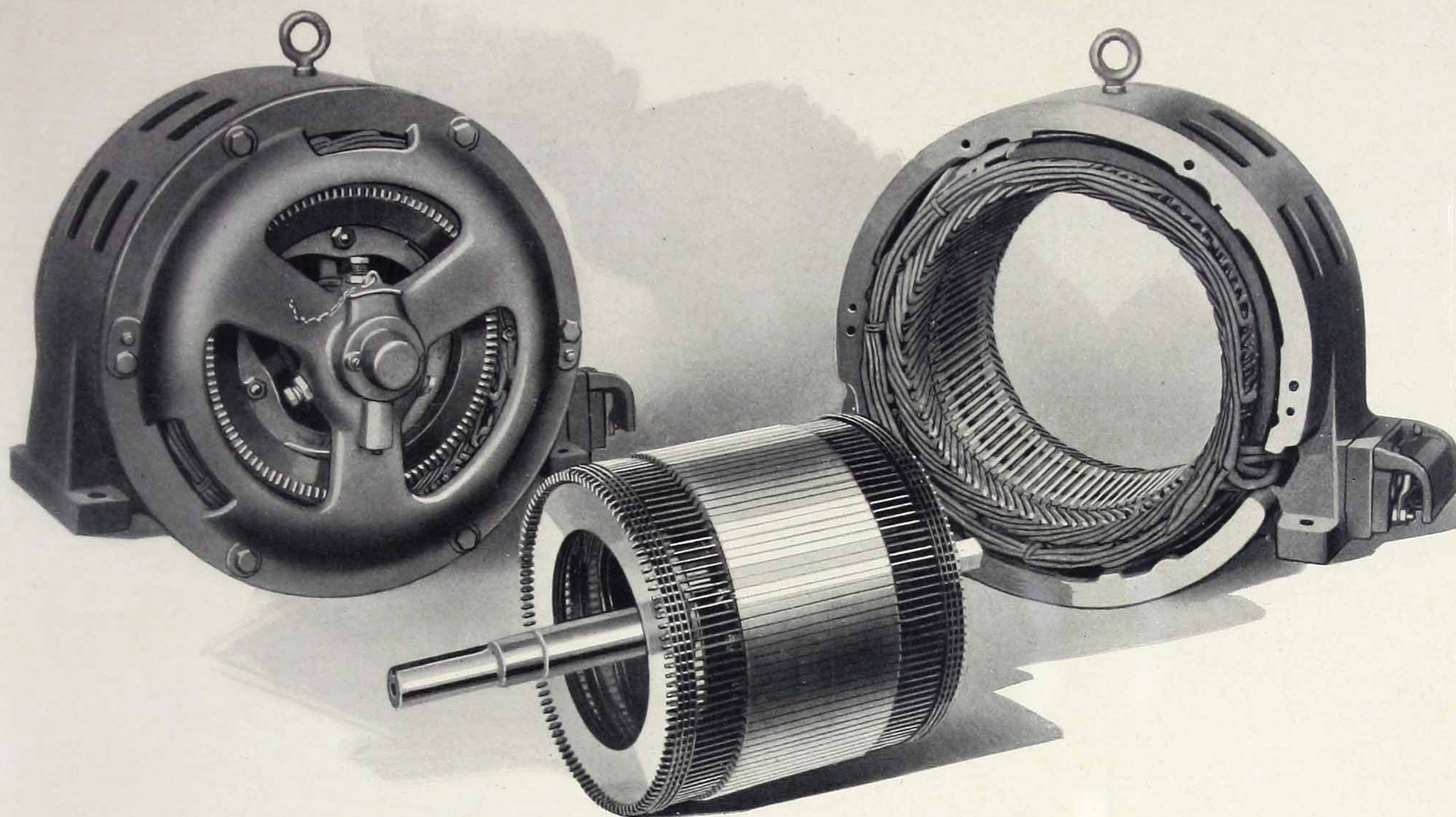


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Otis Internal Resistance Induction Motors

Two Speed - Alternating Current



OTIS Two-Speed Internal Resistance Induction Motors are OTIS designed and manufactured in OTIS factories. These Motors are built to fully meet the exacting requirements of modern high duty elevator service and develop high starting torque with low starting current. Particular effort has been made in the design to produce quiet operation. All parts are easily removable for replacement.

The Rotor windings consist of copper bars, which project beyond the end connections of the stator coils and are electrically welded to a number of short circuiting rings of special construction on each end of the rotor, resulting practically in a Rotor of indestructible construction, thereby eliminating all possibility of open circuits or breakdowns, due to heating from overloads or any other cause. The electrical features of this special type of end ring construction result in the elimination of excessive starting currents, which are usual with other motors of the Internal Resistance Type. Correct ventilation of the motor is obtained during operation from the fan construction of the copper bars at both ends of rotor, and ventilation is obtained when not running by the arrangement of the end rings with their large radiating surfaces. The Rotor is electrically and mechanically balanced, and laminations are made of special steel.

The Stator is provided with two sets of windings, one for slow speed and the other for high speed, so arranged that the elevator will start and stop on slow speed. The change from one speed to the other is accomplished automatically at the proper speed and without interruption of current, which insures smooth and gradual starting and stopping, providing the greatest possible safety, as the motor is never without power with the brake released.

The Motor is strongly and substantially built and is accurately machined. Stator windings are specially insulated. The bearings are self-aligning, adjustable, ample size and provided with lubricating oil rings.

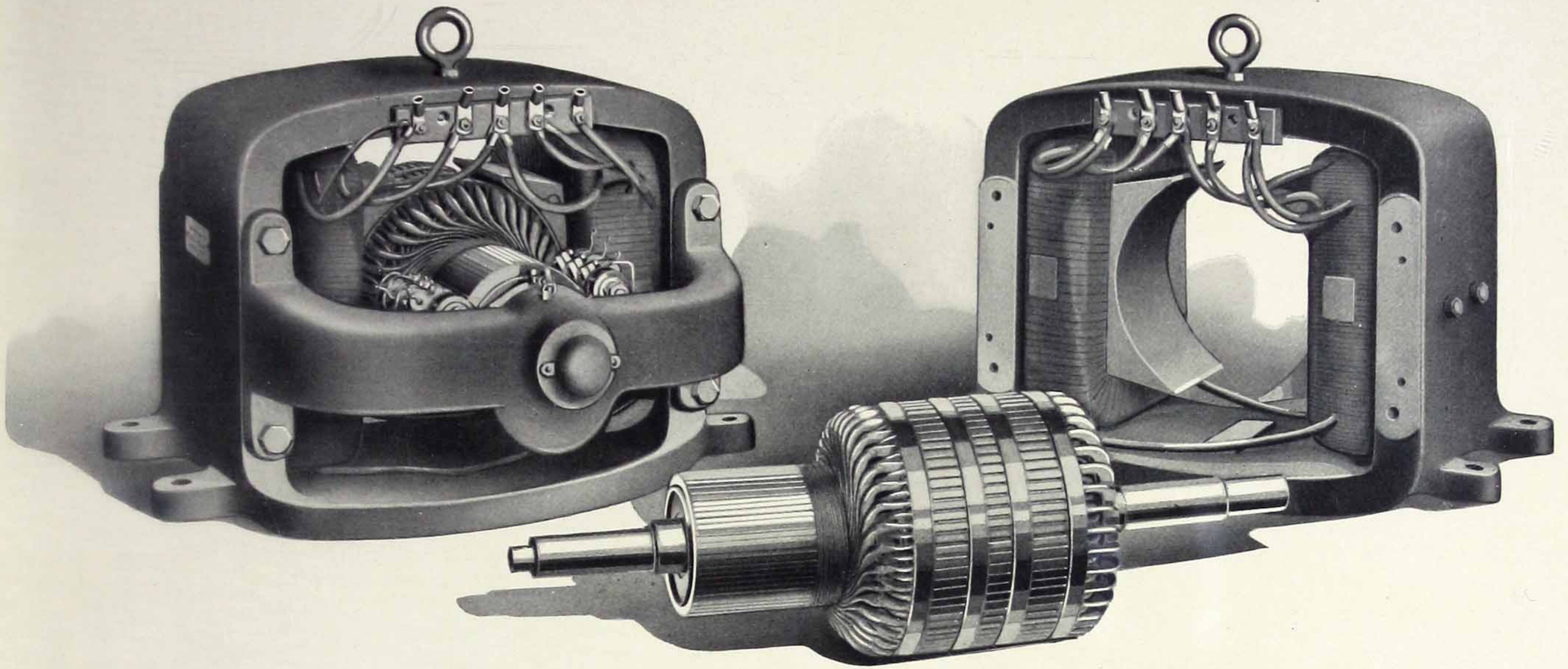
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Otis Direct Current Motors



OTIS Direct Current Motors are OTIS designed and manufactured in OTIS factories. These Motors are built to fully meet the exacting requirements of modern elevator service and develop high starting torque with low starting current. Particular effort has been made in the design to produce quiet operation.

The Armature is built up of thin laminations of special iron, separately punched, insulated to prevent undue heating. The coils are form wound and thoroughly insulated. The Armature is electrically and mechanically balanced.

The Commutator is made of rolled copper bars of high conductivity, thoroughly insulated and provided with large bearing surface and radial depth for wear. The brushes are made of special grade of carbon, of large cross sectional area and carried in brush holders, providing collective adjustment of the brushes. The commutator is turned true and thoroughly insulated from armature shaft.

The Field Coils are form wound, thoroughly impregnated, and are easily removable.

The Motor has an annealed steel frame with laminated pole pieces and is compound wound. The motor starts and accelerates heavily compounded and runs as a shunt motor at practically constant speed. The Motor will operate in either direction without excess heating or undue sparking. The motor is strongly and substantially built and is accurately machined. All parts are easily removable for replacement. Bearings are provided with lubricating oil rings.

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Otis Motors

FOR OTIS GEARLESS TRACTION ELEVATORS



The direct current motors used with OTIS Gearless Traction Machines are OTIS designed and manufactured in OTIS factories. These motors are designed to develop high starting torque with low starting current, to produce quiet operation, and to meet fully the exacting requirements inherently necessary for motors used with Gearless Traction Elevators.

The motor is of special OTIS design, and is the result of our wide experience gained in the continued development of extremely slow speed gearless traction elevator motors, and represents the highest development in the design and construction of motors used for high speed elevator service.

The motor is shunt wound, multi-polar type, and provides variable speeds under the control of the operator. The motor is so designed as to produce exceptionally high efficiency; the maximum starting current is only applied with maximum load, and the maximum efficiency is obtained with average load, which is an extremely desirable feature, as elevators in regular service operate the greater part of the time with average loads. The extremely slow speed at which the motor operates results in very low kinetic energy which, together with the special features of control, produces smooth and rapid acceleration and retardation.

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The armature is built up of thin laminations of special iron, separately punched and insulated to prevent undue heating. The coils are form wound and thoroughly insulated. The armature is electrically and mechanically balanced. The armature shaft is made of cast steel, hollow construction, of special design to secure uniform strength by having a large diameter where the load requires it. The shaft is cast integral with the armature spider, thus eliminating the use of keys. The design insures minimum weight consistent with the rigidity and strength required to withstand the severe stresses to which elevator machines are subjected.

The commutator is made of rolled copper bars of high conductivity, thoroughly insulated, and is of exceptionally large diameter, providing an unusually large number of bars, thus resulting in perfect and sparkless commutation under all conditions of loading. The commutator is thoroughly insulated from the armature shaft, and has ample radial depth for wear. The brushes are made of a special grade of carbon, of large cross sectional area, and mounted in a series of brush holders providing collective adjustment of the brushes.

The wear on the bearings and the commutator is reduced to a minimum, on account of the extremely slow speed of the armature.

The field coils are form wound, thoroughly impregnated, and are easily removable.

The motor has a steel frame, is strongly and substantially built, and accurately machined. All parts are easily removable for replacement.

All exposed cast surfaces are filled and rubbed down, and will have uniform semi-gloss rubber finish. All exposed brass and copper parts are buffed and lacquered.

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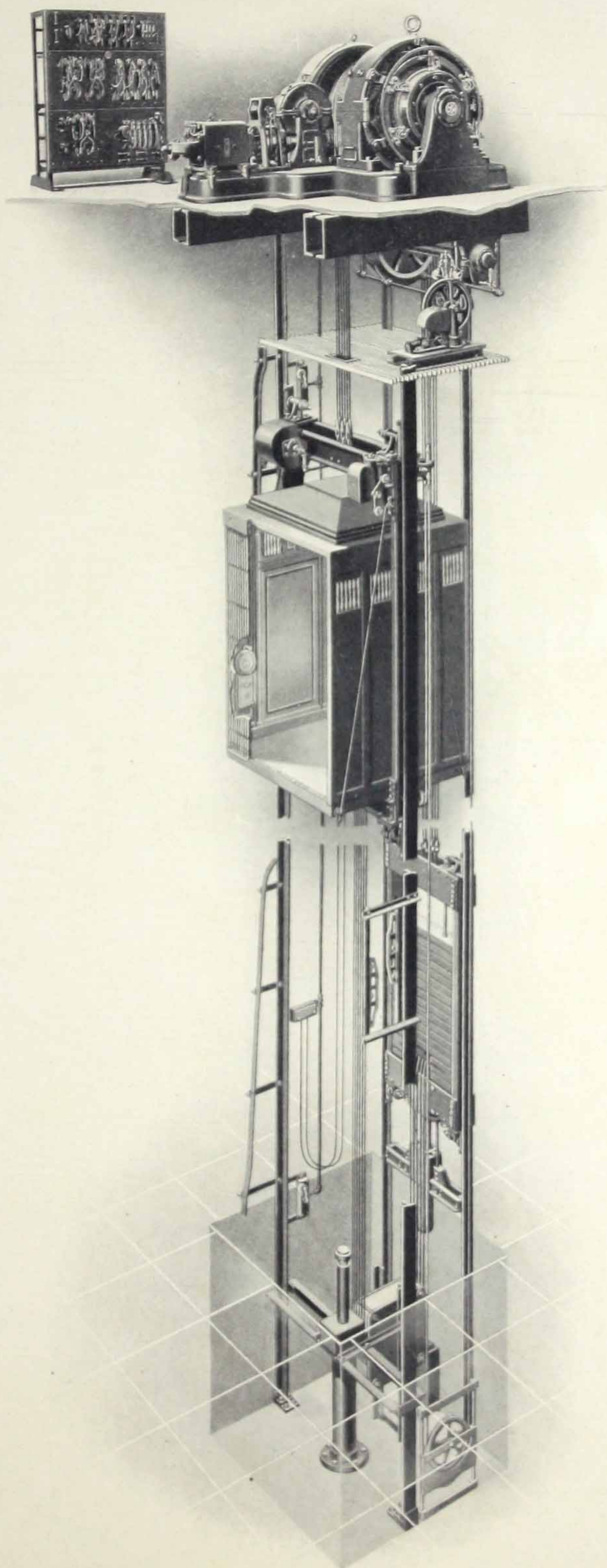


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Otis Gearless Traction Micro-Drive Passenger Elevator



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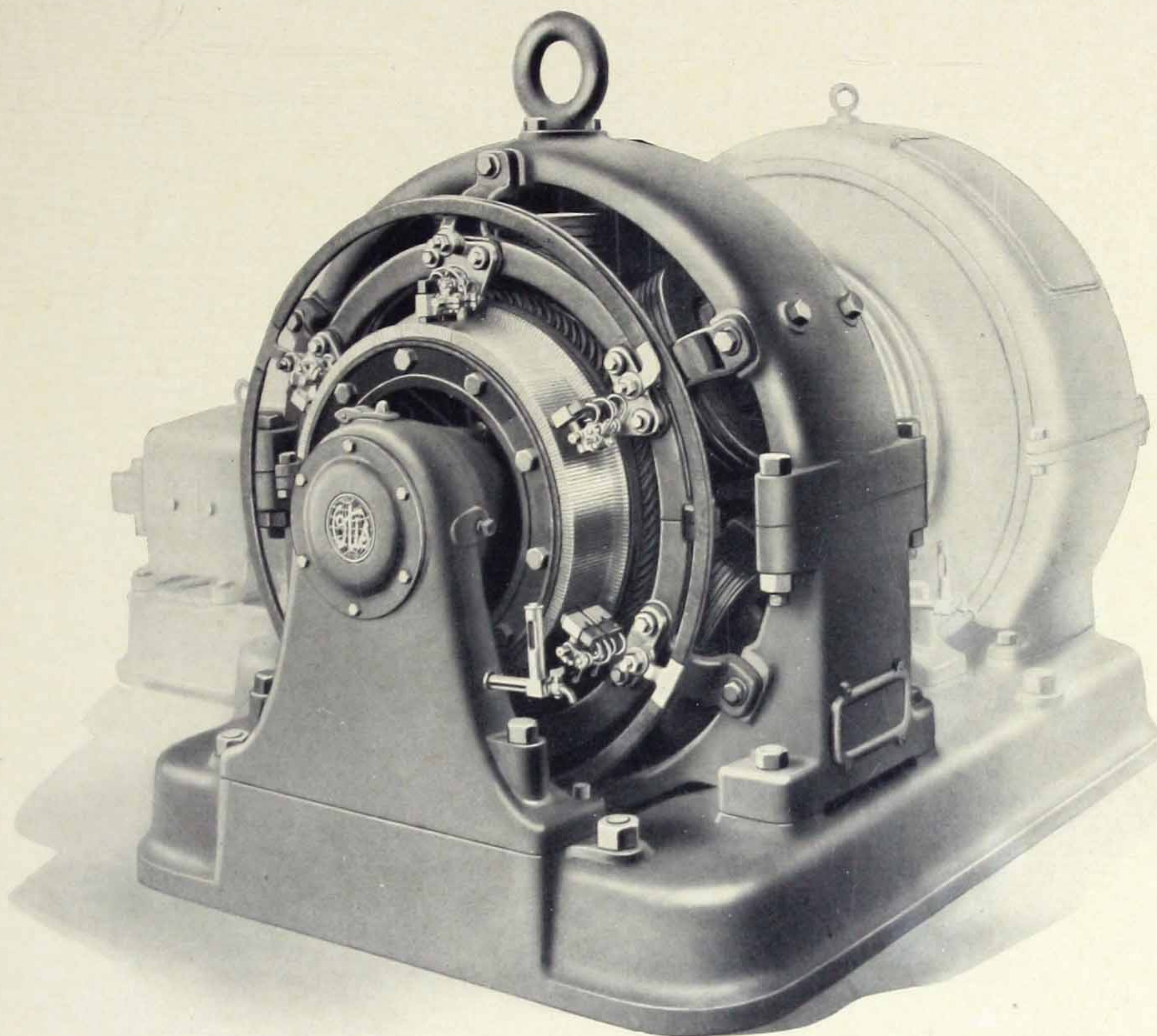


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Otis Motors

FOR OTIS GEARLESS TRACTION MICRO-DRIVE ELEVATORS



THE direct current motors used with OTIS Gearless Traction Micro-Drive Machines are OTIS designed and manufactured in OTIS factories. These motors are designed to develop high starting torque with low starting current, to produce quiet operation, and to meet fully the exacting requirements inherently necessary for motors used with Self-Leveling Machines.

The main motor is of special OTIS design, and is the result of our wide experience gained in the continued development of extremely slow speed gearless traction elevator motors, and represents the highest development in the design and construction of motors used for high speed elevator service.

The main motor is shunt wound, multi-polar type, of extremely slow speed, and provides variable speeds under the control of the operator. The motor is so designed as to produce exceptionally high efficiency; the maximum starting current is only applied with maximum load, and the maximum efficiency is

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obtained with average load, which is an extremely desirable feature as elevators in regular service operate the greater part of the time with average loads. The extremely slow speed at which the main motor operates results in very low kinetic energy which, together with the special features of control, produces smooth and rapid acceleration and retardation.

The armature is built up of thin laminations of special iron, separately punched and insulated to prevent undue heating. The coils are form wound and thoroughly insulated. The armature is electrically and mechanically balanced. The armature shaft is made of cast steel, hollow construction, of special design to secure uniform strength by having a large diameter where the load requires it. The shaft is cast integral with the armature spider, thus eliminating the use of keys. The design insures minimum weight consistent with the rigidity and strength required to withstand the severe stresses to which elevator machines are subjected.

The commutator is made of rolled copper bars of high conductivity, thoroughly insulated, and is of exceptionally large diameter providing an unusually large number of bars, thus resulting in perfect and sparkless commutation under all conditions of loading. The commutator is thoroughly insulated from the armature shaft, and has ample radial depth for wear. The brushes are made of a special grade of carbon, of large cross sectional area, and mounted in a series of brush holders providing collective adjustment of the brushes.

The wear on the bearings and the commutator is reduced to a minimum, due to the extremely slow speed of the armature.

The field coils are form wound, thoroughly impregnated and are easily removable.

The leveling motor is of OTIS design, *Micro-Drive type*, compound wound, equipped with self-aligning bearings and especially designed for smooth and rapid acceleration and retardation as required for motors used with Self-Leveling Machines.

The motors have steel frames, are strongly and substantially built, and accurately machined. All parts are easily removable for replacement.

All exposed cast surfaces are filled and rubbed down, and will have uniform semi-gloss rubber finish. All exposed brass and copper parts are buffed and lacquered.

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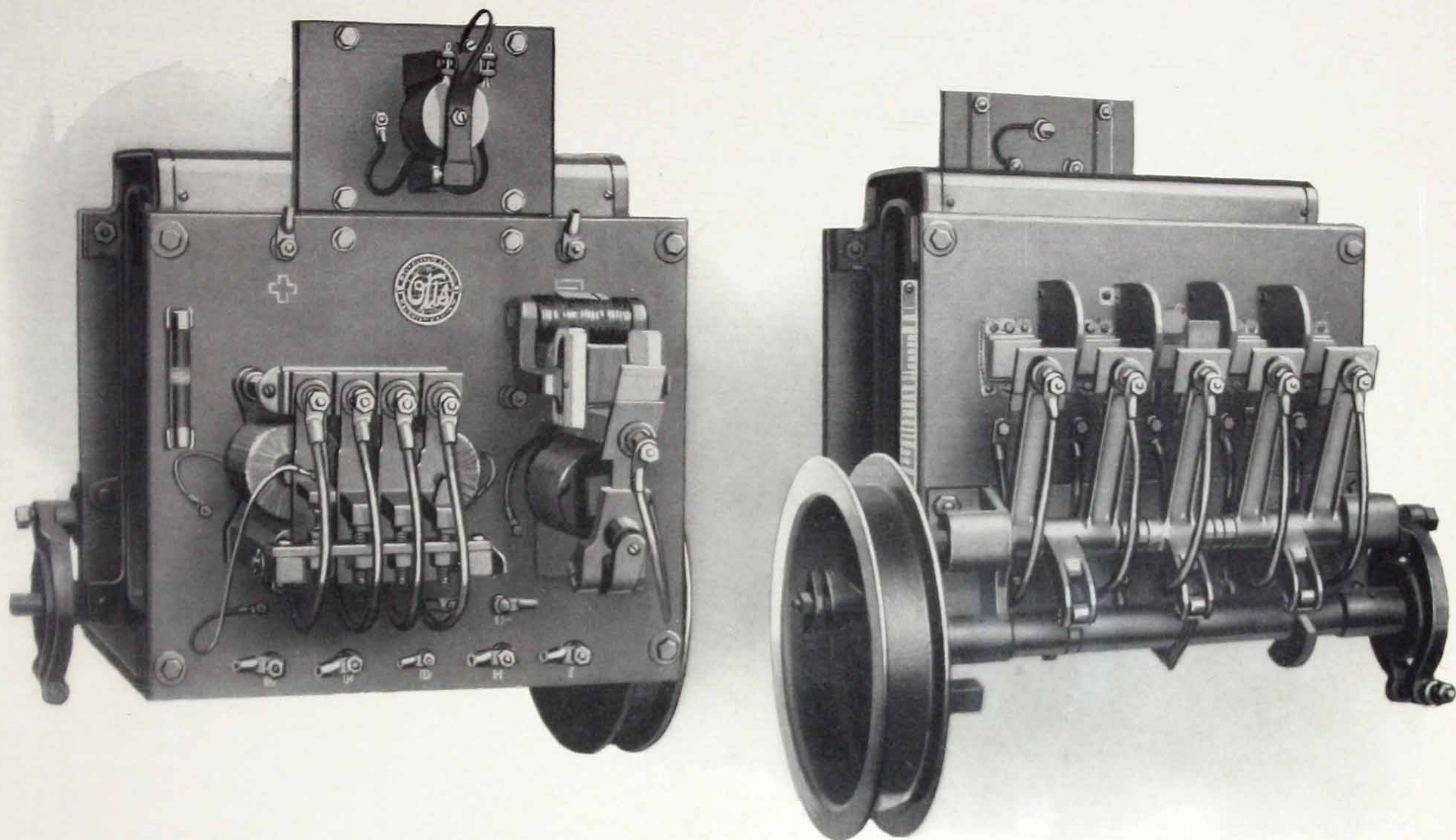


CCA



Otis Controller

Hand Rope Operation - Direct Current



OTIS Controllers are OTIS designed and manufactured in OTIS factories. This Controller is of the Semi-Magnetic Type, operated by means of a hand rope and used with slow-speed elevators equipped with OTIS Direct Current Motors.

Operation is obtained by movement of the hand rope in the hatchway, closing a mechanical reversing switch and which in turn closes a magnetically operated main line switch. This switch operates an accelerating device, which automatically accelerates the motor up to full running speed independently of the operator. This controller is designed to prevent admission of more current than is necessary to perform the specified duty of the elevator. In starting, the reversing switch is closed before the main line switch operates; in stopping, the reversing switch does not open until after the main line switch has cut off all current, thereby minimizing the possibility of burning these contacts.

The Electrical Safety Devices as provided with this type of controller consist of hatchway limit switches, safety switch in the car for emergency use, and a switch which is actuated by the car safety device. All these safety devices are so arranged that they automatically cut off all power, apply the brake and bring the elevator to rest independently of the operator. Protective fuses are provided for all operating circuits.

Should the electric power fail or be interrupted for any reason, the controller is designed so that when power is resumed, the elevator cannot be operated until the hand rope has been centered.

The Controller is substantially constructed, of compact design and thoroughly insulated. The switches have copper to carbon contacts of ample size, backed with cushion springs to maintain proper contact, and are mounted on best quality slate, free from metallic veins. All parts are easily removable for replacement and can be readily adjusted.

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Otis Controller

Car Switch Control - Direct Current Single or Two Speed

OTIS Controllers are OTIS designed and manufactured in OTIS factories. This Controller is of the Full Magnetic Type, operated by means of switch in the car and used with moderate speed elevators equipped with OTIS Direct Current Motors.

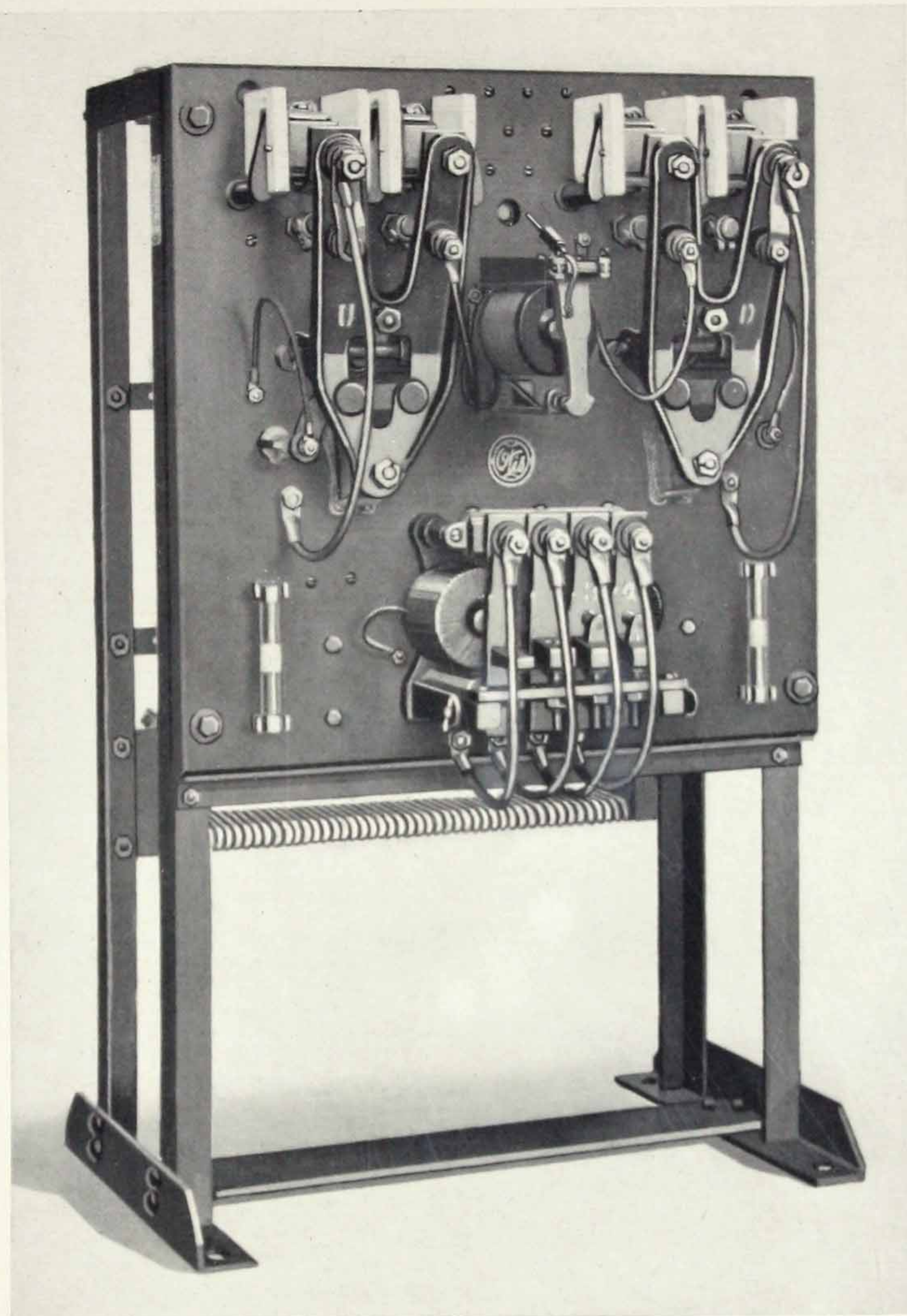
Operation is obtained by movement of a switch in the car, which is electrically connected to the magnets on the controller panels to control direction of travel, acceleration and speed. The car switch is arranged to automatically return to neutral or stop position when released by the operator, and carries only the small auxiliary currents, thereby eliminating arcing and burning of contacts.

Correct and smooth acceleration is obtained automatically and independently of the operator by automatically cutting out starting resistance in steps as the motor accelerates to full speed, with corresponding reduction in starting current. This controller is designed to prevent damage to the motor from overload or excess current and prevent admission of more current than is necessary to perform the specified duty of the elevator. The reversing switches

are interlocked so as to prevent reversal of travel until all contacts in the opposite direction have been opened. Dynamic braking effect is automatically obtained in stopping. The controller employs electro-magnets throughout, thereby eliminating the use of all rheostats, sliding contacts or other easily deranged devices.

The Electrical Safety Devices as provided with this type of controller consist of hatchway limit switches, safety switch in the car for emergency use and a switch which is actuated by the car safety device. All these safety devices are so arranged that they automatically cut off all power, apply the brake and bring the elevator to rest independently of the operator. Protective fuses are provided for operating circuits.

The Controller is made up of selected slate panels, free of metallic veins, mounted on heavy angle iron frame and thoroughly insulated. Suitable resistance is mounted on rear of controller, arranged for proper ventilation. All magnet coils are thoroughly impregnated by a special process. All switches have copper to carbon contacts of ample size, backed with cushion springs to maintain proper contact. The switches that make or break the main circuit are provided with powerful magnetic blowouts to prevent destructive arcing. Connections to switches and resistance are placed on the rear of controller panel to provide easy access. All parts are easily removable for replacement and can be readily adjusted.



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Otis Controller

Car Switch Control - Direct Current Two Speed

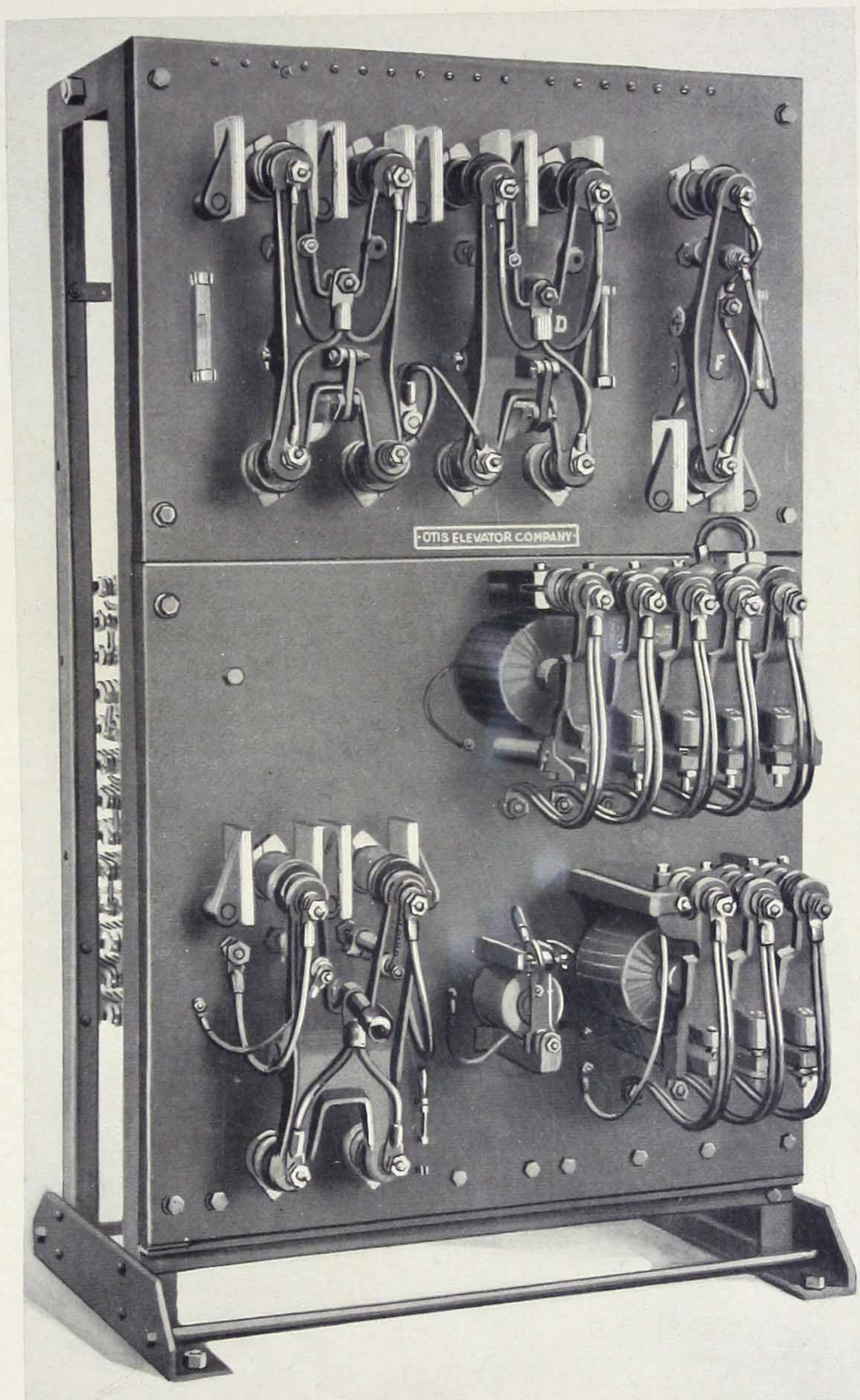
OTIS Controllers are OTIS designed and manufactured in OTIS factories. This Controller is of the Full Magnetic Type, operated by means of switch in the car, and used with high duty elevators equipped with OTIS Two Speed Direct Current Motors.

Operation is obtained by movement of a switch in the car, which has fast and slow speed running positions, and which is electrically connected to the magnets on the controller panels, to control direction of travel, acceleration and speed. The car switch is arranged to automatically return to neutral or stop position when released by the operator, and carries only small auxiliary currents, thereby eliminating arcing and burning of contacts.

Correct and smooth acceleration is obtained automatically and independently of the operator, with corresponding reduction in starting current. This Controller is designed to prevent damage to the motor from overload or excess current and prevent admission of more current than is necessary to perform the specified duty of the elevator. The reversing switches are mechanically interlocked so as to prevent reversal of travel until all contacts in the opposite direction have been opened. Dynamic braking effect is automatically obtained in stopping. The controller employs electro-magnets throughout, thereby eliminating the use of all rheostats, sliding contacts or other easily deranged devices.

The Electrical Safety Devices as provided with this type of controller consist of hatchway limit switches, safety switch in the car for emergency use and a switch which is actuated by the car safety device. All these safety devices are so arranged that they automatically cut off all power, apply the brake and bring the elevator to rest independently of the operator. Stopping switch is provided for automatically slowing down car to normal stop at terminal landings. Protective fuses are provided for operating circuits.

The Controller is made up of selected slate panels, free of metallic veins, mounted on heavy angle iron frame and thoroughly insulated. Suitable resistance is mounted on rear of controller, arranged for proper ventilation. All switches have copper to carbon contacts of ample size, backed with cushion springs to maintain proper contact. The switches that make or break the main circuit are provided with powerful magnetic blowouts to prevent destructive arcing. Connections to switches and resistance are placed on the rear of controller panel to provide easy access. All parts are easily removable for replacement and can be readily adjusted.



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Otis Controller

Car Switch Control - Direct Current Two Speed

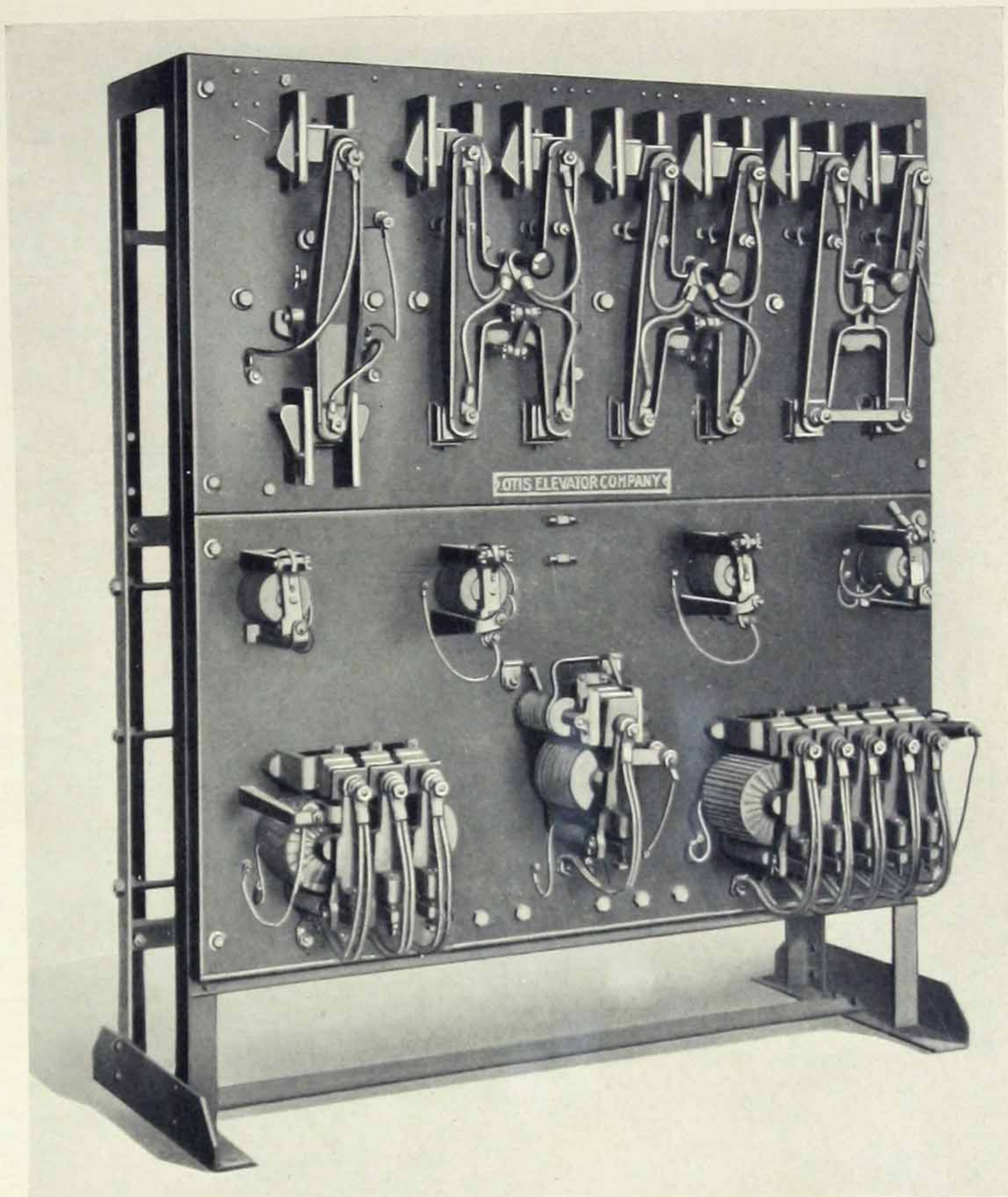
OTIS Controllers are OTIS designed and manufactured in OTIS factories. This Controller is of the Full Magnetic Type, operated by means of switch in the car, and used with high duty elevators equipped with OTIS Two Speed Direct Current Motors.

Operation is obtained by movement of a switch in the car, which has fast and slow speed running positions, and which is electrically connected to the magnets on the controller panels, to control direction of travel, acceleration and speed. The car switch is arranged to automatically return to neutral or stop position when released by the operator, and carries only small auxiliary currents, thereby eliminating arcing and burning of contacts.

Correct and smooth acceleration is obtained automatically and independently of the operator, with corresponding reduction in starting current. This Controller is designed to prevent damage to the motor from overload or excess current and prevent admission of more current than is necessary to perform the specified duty of the elevator. The reversing switches are mechanically interlocked so as to prevent reversal of travel until all contacts in the opposite direction have been opened. Dynamic braking effect is automatically obtained in stopping. The controller employs electro-magnets throughout, thereby eliminating the use of all rheostats, sliding contacts or other easily deranged devices.

The Electrical Safety Devices as provided with this type of controller consist of hatchway limit switches, safety switch in the car for emergency use, and a switch which is actuated by the car safety device. All these safety devices are so arranged that they automatically cut off all power, apply the brake and bring the elevator to rest independently of the operator. A stopping switch is provided for automatically slowing down car to normal stop at terminal landings. Protective fuses are provided for operating circuits.

The Controller is made up of selected slate panels, free of metallic veins, mounted on heavy angle iron frame and thoroughly insulated. Suitable resistance is mounted on rear of controller, arranged for proper ventilation. All switches have copper to carbon contacts of ample size, backed with cushion springs to maintain proper contact. The switches that make or break the main circuit are provided with powerful magnetic blowouts to prevent destructive arcing. Connections to switches and resistance are placed on the rear of controller panel to provide easy access. All parts are easily removable for replacement and can be readily adjusted.



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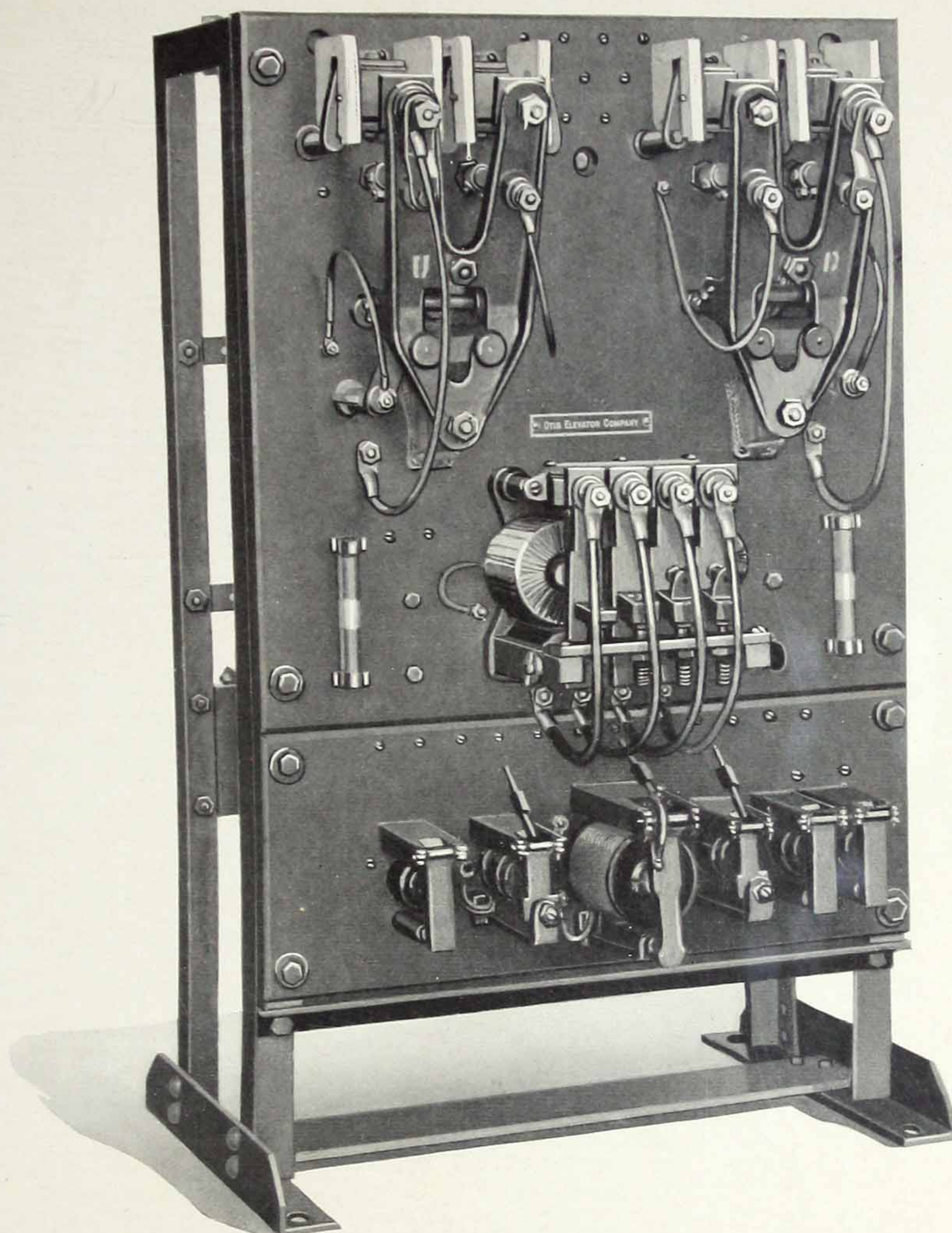


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Otis Controller

Push Button Control - Direct Current



OTIS Controllers are OTIS designed and manufactured in OTIS factories. This Controller is of the Full Automatic Type, operated by means of push buttons, and used with moderate speed elevators equipped with OTIS Direct Current Motors.

Push Buttons are provided with this controller, located at each landing, the momentary pressing of which brings the car opposite the landing at which the button is pressed, unless the elevator is in use, in which case all landing buttons are inoperative. Operation from the car is obtained by means of a series of push buttons, numbered to correspond to the various landings. The momentary pressing of one of these buttons will send the car to the designated floor, where it will automatically come to rest. In addition, there is a safety or stop button, the momentary pressing of which will stop the car.

Otis automatic interlocking door fixtures are provided on the enclosure doors at all landings, to prevent the movement of the car unless all doors are closed and locked, and also to prevent the opening of any door excepting the one to which the car has been sent or called, and

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then only when the car has stopped at that landing. This is obtained by means of an automatic electric door selective unlocking device with a retiring cam on the car, which engages only the door at the landing to which the car has been sent.

An Electric Contact is provided to be used in connection with the collapsing gate in the car and connected in the operating circuit in such a manner as to prevent the movement of the car while this gate is open.

Automatic non-interference protection is provided, so that when the car is in use, pressure on a button at any outside landing will not call the car until the car has reached its designated landing and the landing door has been opened and closed.

Correct and smooth acceleration is attained automatically by cutting out starting resistance in steps as the motor accelerates to full speed, with corresponding reduction in starting current. This controller is designed to prevent damage to the motor from overloads or excess current and prevent admission of more current than is necessary to perform the specified duty of the elevator. Dynamic braking effect is automatically obtained in stopping. The controller employs electro-magnets throughout, thereby eliminating the use of all rheostats, sliding contacts or other easily deranged devices.

Additional electrical safety devices as provided with this type of controller consist of hatchway limit switches, and a switch which is actuated by the car safety device. All these safety devices are so arranged that they automatically cut off all power, apply the brake and bring the elevator to rest. Protective fuses are provided for operating circuits.

The Controller is made up of selected slate panels, free of metallic veins, mounted on heavy angle iron frame and thoroughly insulated. Suitable resistance is mounted on rear of controller, arranged for proper ventilation. All switches have copper to carbon contacts of ample size, backed with cushion springs to maintain proper contact. The switches that make or break the main circuit are provided with powerful magnetic blowouts to prevent destructive arcing. Connections to switches and resistance are placed on the rear of controller panel to provide easy access. All parts are easily removable for replacement and can be readily adjusted.



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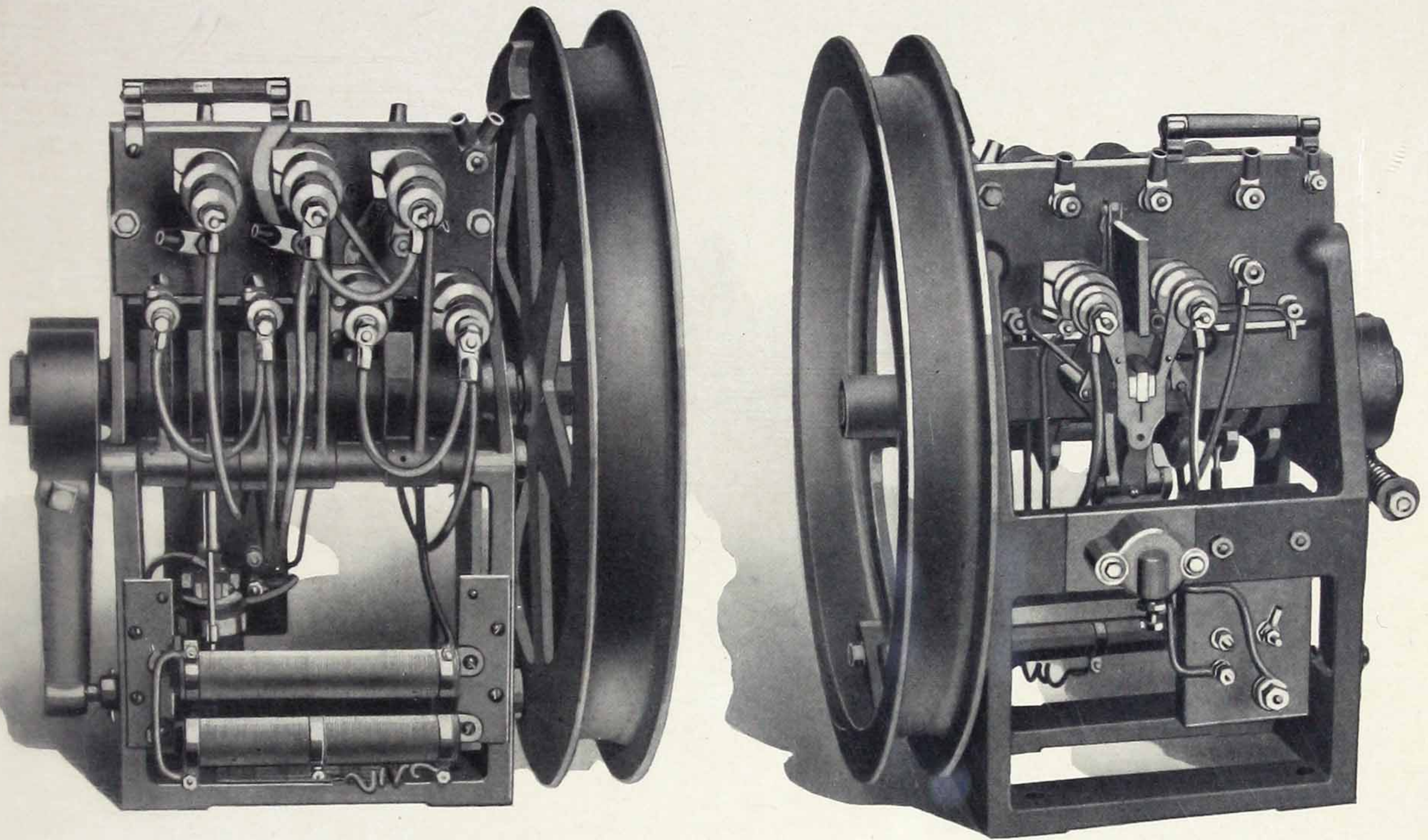


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Otis Controller

Hand Rope Operation - Alternating Current



OTIS Controllers are OTIS designed and manufactured in OTIS factories. This Controller is of the Semi-Magnetic Type, operated by means of a hand rope and used with slow-speed elevators equipped with OTIS Internal Resistance Induction Motors.

Operation is obtained by movement of the hand rope in the hatchway, which closes a mechanical reversing switch, which in turn closes a magnetically operated main line switch and starts the motor. In starting, the reversing switch is closed before the main line switch operates; in stopping, the reversing switch does not open until after the main line switch has cut off current, thereby minimizing the possibility of burning these contacts.

The electrical safety devices provided with this type of controller consist of hatchway limit switches, safety switch in the car for emergency use, and a switch which is actuated by the car safety device. All these safety devices are so arranged that they automatically cut off all power, apply the brake, and bring the elevator to rest independently of the operator. Protective fuses are provided for operating circuits.

Should the electric power fail or be interrupted for any reason, the controller is designed so that, when power is resumed, the elevator cannot be operated until the hand rope has been centered.

The Controller is substantially constructed, of compact design, and thoroughly insulated. The switches have copper to carbon contacts of ample size, backed with cushion springs to maintain proper contact, and are mounted on best quality slate, free from metallic veins. All parts are easily removable for replacement and can be readily adjusted.

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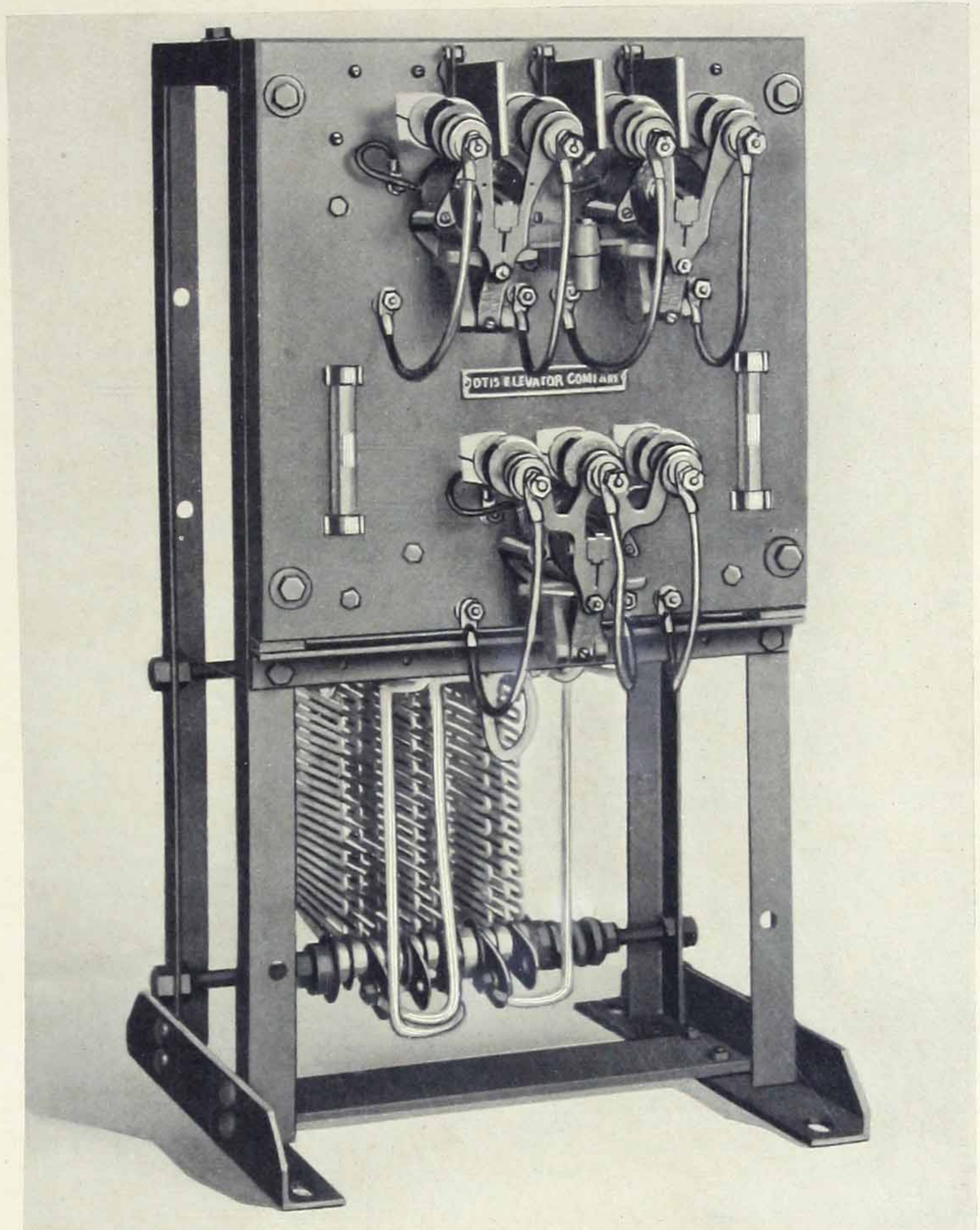
Otis Controller

Car Switch Control - Alternating Current Single Speed

OTIS Controllers are OTIS designed and manufactured in OTIS factories. This Controller is of the Full Magnetic Type, operated by means of switch in the car and used with moderate speed elevators equipped with OTIS Internal Resistance Induction Motors.

Operation is obtained by movement of a switch in the car, which is electrically connected to the magnets on the controller panels, to control direction of travel, acceleration and speed. The car switch is arranged to automatically return to neutral or stop position when released by the operator, and carries only small auxiliary currents, thereby eliminating arcing and burning of contacts.

Correct and smooth acceleration is obtained automatically and independently of the operator, with corresponding reduction in starting current. The reversing switches are mechanically interlocked so as to prevent reversal of travel until all contacts in the opposite direction have been opened. The controller employs electro-magnets throughout, thereby eliminating the use of all rheostats, sliding contacts or other easily deranged devices.



The Electrical Safety Devices as provided with this type of controller consist of hatchway limit switches, safety switch in the car for emergency use and a switch which is actuated by the car safety device. All these safety devices are so arranged that they automatically cut off all power, apply the brake and bring the elevator to rest independently of the operator. Protective fuses are provided for operating circuits.

The Controller is made up of selected slate panels, free of metallic veins, mounted on heavy angle iron frame and thoroughly insulated. Suitable resistance is mounted on rear of controller, arranged for proper ventilation. All switches have copper to carbon contacts of ample size, backed with cushion springs to maintain proper contact. Connections to switches and resistance are placed on the rear of controller panel to provide easy access. All parts are easily removable for replacement and can be readily adjusted.

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Otis Controller

Car Switch Control - Alternating Current Single Speed

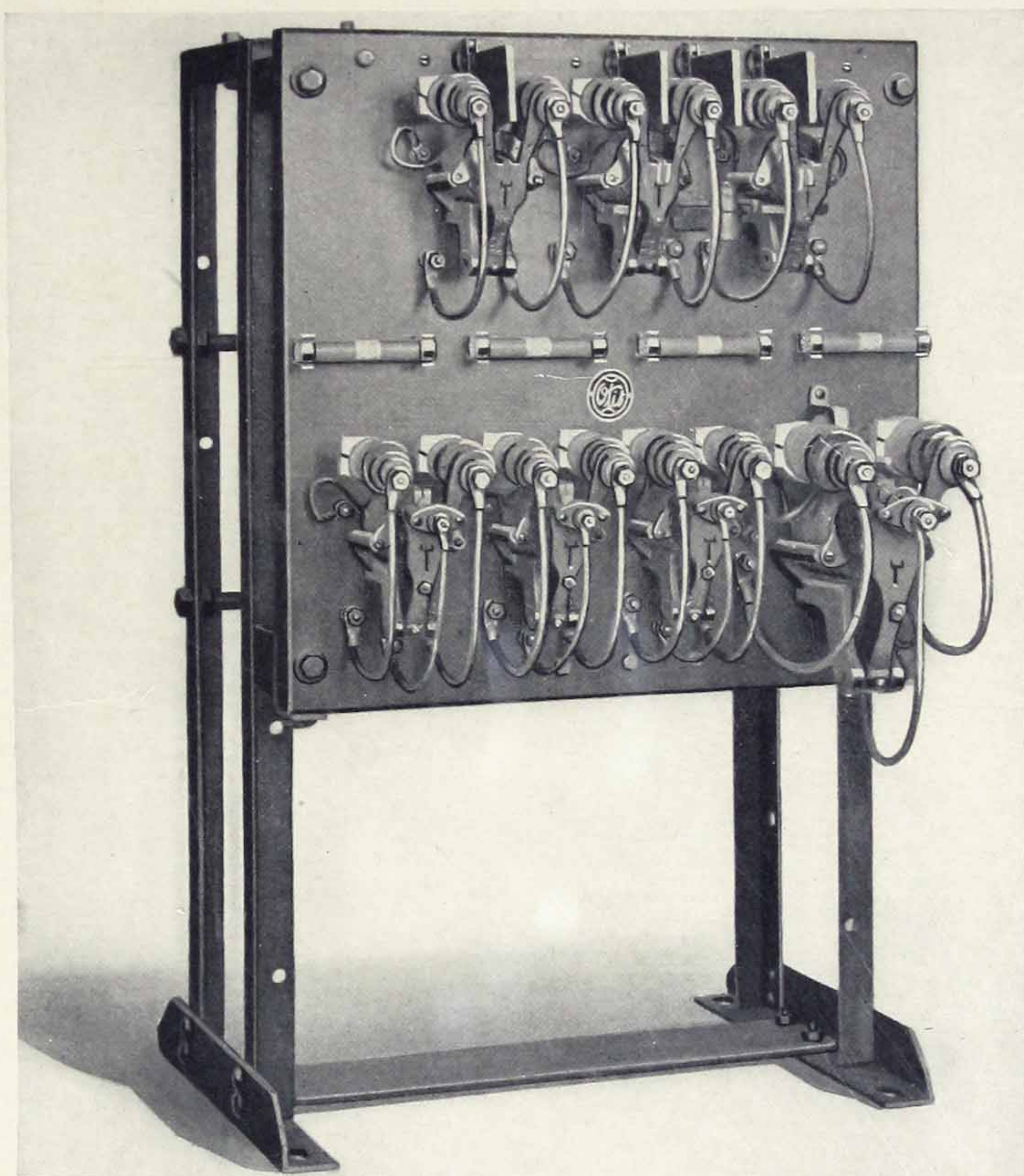
OTIS Controllers are OTIS designed and manufactured in OTIS factories. This Controller is of the Full Magnetic Type, operated by means of a switch in the car and used with moderate speed elevators equipped with OTIS Slip Ring Induction Motors.

Operation is obtained by movement of a switch in the car, which is electrically connected to the magnets on the controller panels to control direction of travel, acceleration, and speed. The car switch is arranged to return automatically to neutral or stop position when released by the operator, and carries only the small auxiliary currents, thereby eliminating arcing and burning of contacts.

Correct and smooth acceleration is obtained automatically and independently of the operator by automatically cutting out starting resistance in steps as the motor accelerates to full speed, with corresponding reduction in starting current. The reversing switches are mechanically interlocked so as to prevent reversal of travel until all contacts in the opposite direction have been opened. The controller employs electro-magnets throughout, thereby eliminating the use of all rheostats, sliding contacts, or other easily deranged devices.

The electrical safety devices provided with this type of controller consist of hatchway limit switches, safety switch in the car for emergency use, and a switch which is actuated by the car safety device. All these safety devices are so arranged that they automatically cut off all power, apply the brake, and bring the elevator to rest independently of the operator. Protective fuses are provided for operating circuits.

The controller is made up of selected slate panels, free of metallic veins, mounted on heavy angle iron frame, and thoroughly insulated. Suitable resistance is mounted on rear of controller, arranged for proper ventilation. All switches have copper to carbon contacts of ample size, backed with cushion springs to maintain proper contact. All magnet coils are thoroughly impregnated by a special process. Connections to switches and resistance are placed on the rear of controller panel to provide easy access. All parts are easily removable for replacement and can be readily adjusted.



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Otis Controller

Push Button Control - Alternating Current - Single Speed

OTIS Controllers are OTIS designed and manufactured in OTIS factories. This Controller is of the Full Automatic Type, operated by means of push buttons, and used with moderate speed elevators equipped with OTIS Internal Resistance Induction Motors.

Push buttons at each landing are provided with this controller, the momentary pressing of which brings the car opposite the landing at which the button is pressed, unless the elevator is in use, in which case all landing buttons are inoperative. Operation from the car is obtained by means of a series of push buttons, numbered to correspond to the various landings. The momentary pressing of one of these buttons will send the car to the designated floor, where it will automatically come to rest. In addition, there is a safety or stop button, the momentary pressing of which will stop the car.

OTIS automatic interlocking door fixtures are provided on the enclosure doors at all landings to prevent the movement of the car unless all doors are closed and locked, and also to prevent the opening of any door excepting the one to which the car has been sent or called, and then only when the car has stopped at that landing. This is obtained by means of an automatic electric door selective locking device with a retiring cam on the car, which engages only the door at the landing to which the car has been sent.

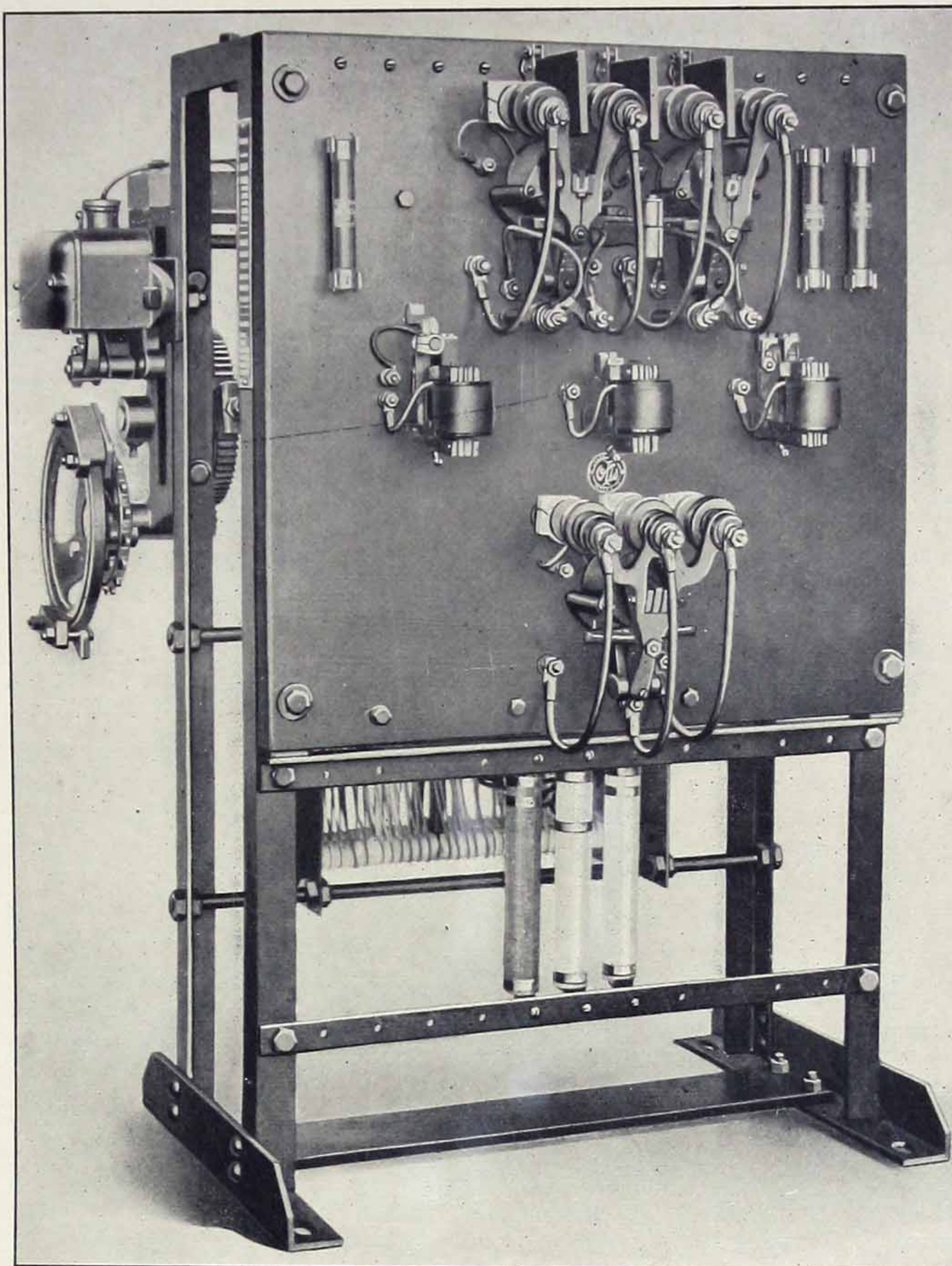
An electric contact is connected in the operating circuit in such a manner as to prevent the movement of the elevator while the collapsing gate in the car is open.

Automatic non-interference protection is provided, so that, when the car is in use, pressing a button at any outside landing will not call the car until it has reached its designated landing and the car gate has been opened and closed.

Correct and smooth acceleration is obtained automatically and with corresponding reduction in starting current. The controller employs electro-magnets throughout, thereby eliminating the use of all rheostats, sliding contacts, or other easily deranged devices.

Additional electrical safety devices provided with this type of controller consist of hatchway limit switches, and a switch which is actuated by the car safety device. All these safety devices are so arranged that they automatically cut off all power, apply the brake, and bring the elevator to rest. Protective fuses are provided for operating circuits.

The controller is made up of selected slate panels, free of metallic veins, mounted on heavy angle iron frame, and thoroughly insulated. Suitable resistance is mounted on rear of controller, arranged for proper ventilation. All magnet coils are thoroughly impregnated by a special process. All switches have copper to carbon contacts of ample size, backed with cushion springs to maintain proper contact, and are mounted on best quality slate, free from metallic veins. The switches that make or break the main circuit are provided with powerful magnetic blowouts to prevent destructive arcing. Connections to switches and resistance are placed on the rear of controller panel to provide easy access. All parts are easily removable for replacement and can be readily adjusted.



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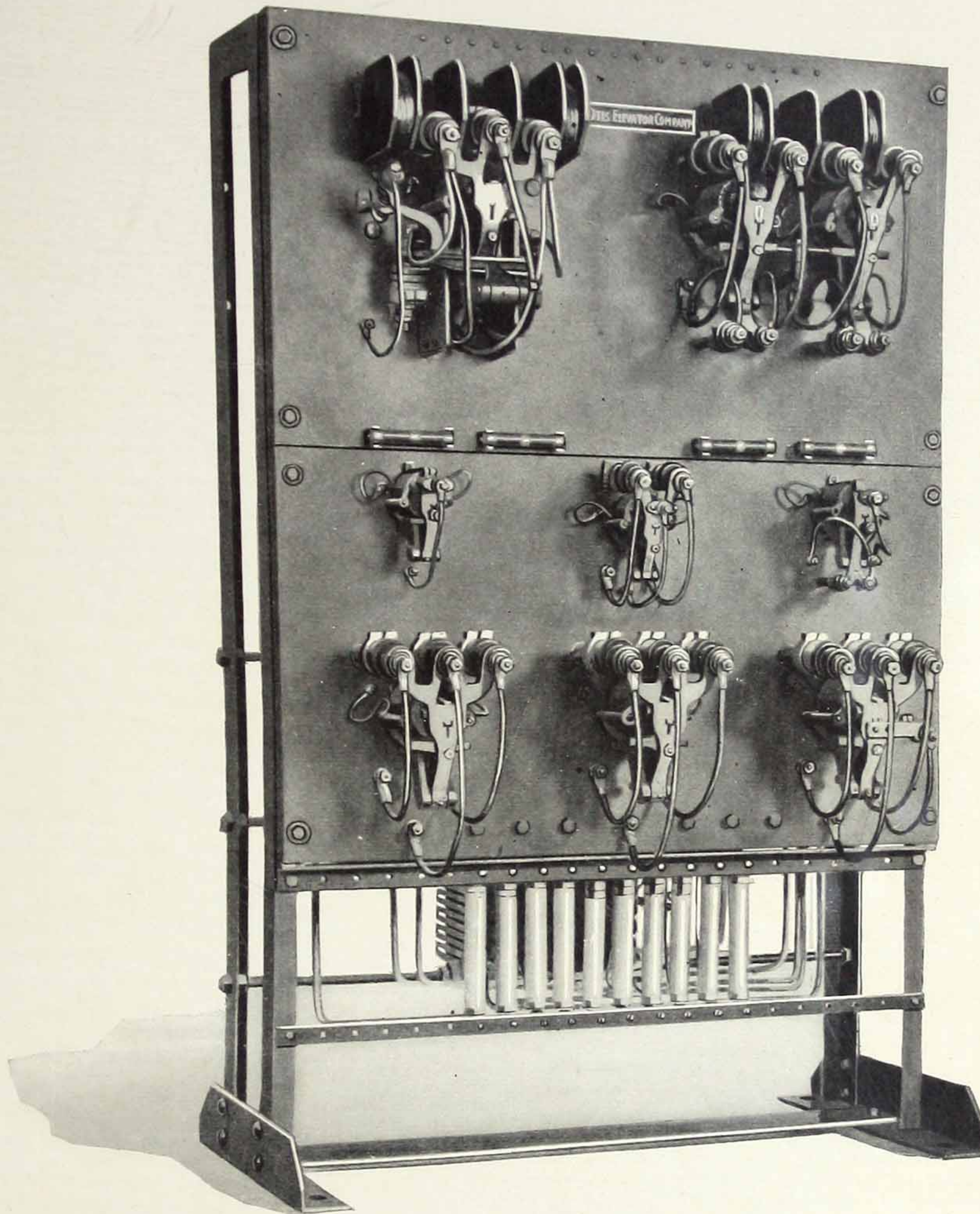


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Otis Controller

Car Switch Control - Alternating Current
Two Speed



OTIS Controllers are OTIS designed and manufactured in OTIS factories. This Controller is of the Full Magnetic Type, operated by means of switch in the car, and used with high duty elevators equipped with OTIS Two Speed Internal Resistance Induction Motors.

Operation is obtained by movement of a switch in the car, which has fast and slow speed running positions, and which is electrically connected to the magnets on the controller panels, to control direction of travel, acceleration and speed. The car switch is arranged to automatically return to neutral or stop position when released by the operator, and carries only small auxiliary currents, thereby eliminating arcing and burning of contacts.

Correct and smooth acceleration and the changing from one speed to another is accomplished automatically and independently of the operator by the accelerating switches electrically interlocked with a speed regulator and with a corresponding reduction in starting current.

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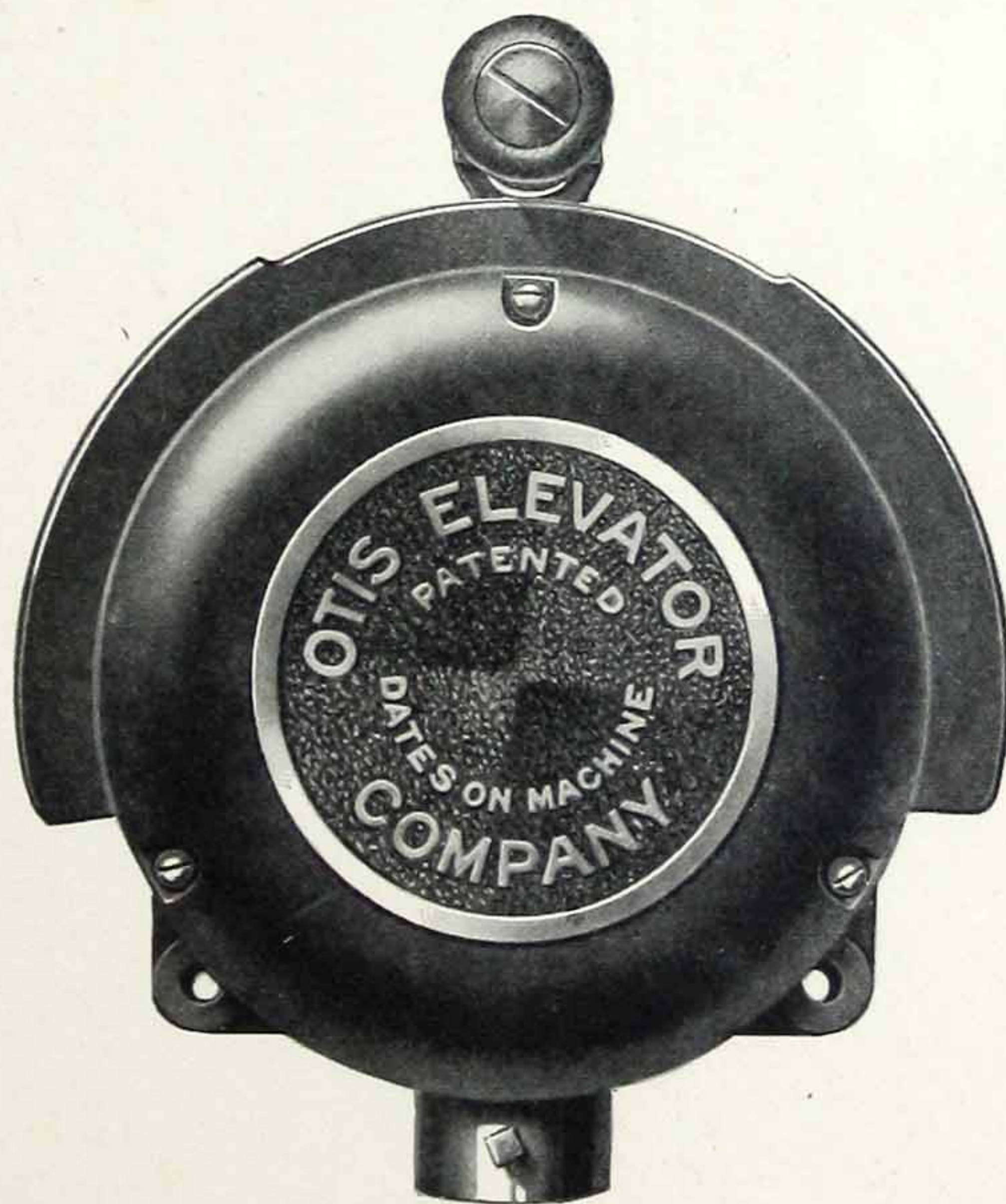


The Controller is so arranged that the motor starts on slow speed, insuring a smooth and gradual start, thereby resulting in a corresponding reduction in starting current. The change to high speed is accomplished smoothly and without interruption of power, and on stopping, the change from high to slow speed is accomplished in the same manner.

A dynamic braking effect is obtained when changing from high to low speed and before the electric brake is automatically applied, thus resulting in a smooth and gradual stop, with minimum wear of the brake linings. The reversing switches are mechanically interlocked so as to prevent reversal of travel until all contacts in the opposite direction have been opened. The controller employs electro-magnets throughout, thereby eliminating the use of all rheostats, sliding contacts or other easily deranged devices.

The Electrical Safety Devices as provided with this type of controller consist of hatchway limit switches, safety switch in the car for emergency use and a switch which is actuated by the car safety device. All these safety devices are so arranged that they automatically cut off all power, apply the brake and bring the elevator to rest independently of the operator. Slow down switches are provided for automatically slowing down the car to a normal stop at terminal landings. Protective fuses are provided for operating circuits.

The Controller is made up of selected slate panels, free of metallic veins, mounted on heavy angle iron frame and thoroughly insulated. Suitable resistance is mounted on rear of controller, arranged for proper ventilation. All switches have copper to carbon contacts of ample size, backed with cushion springs to maintain proper contact. The switches that make or break the main circuit are provided with powerful magnetic blowouts to prevent destructive arcing. Connections to switches and resistance are placed on the rear of controller panel to provide easy access. All parts are easily removable for replacement and can be readily adjusted.



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Otis Controller

Car Switch Control - Direct Current Single or Two Speed

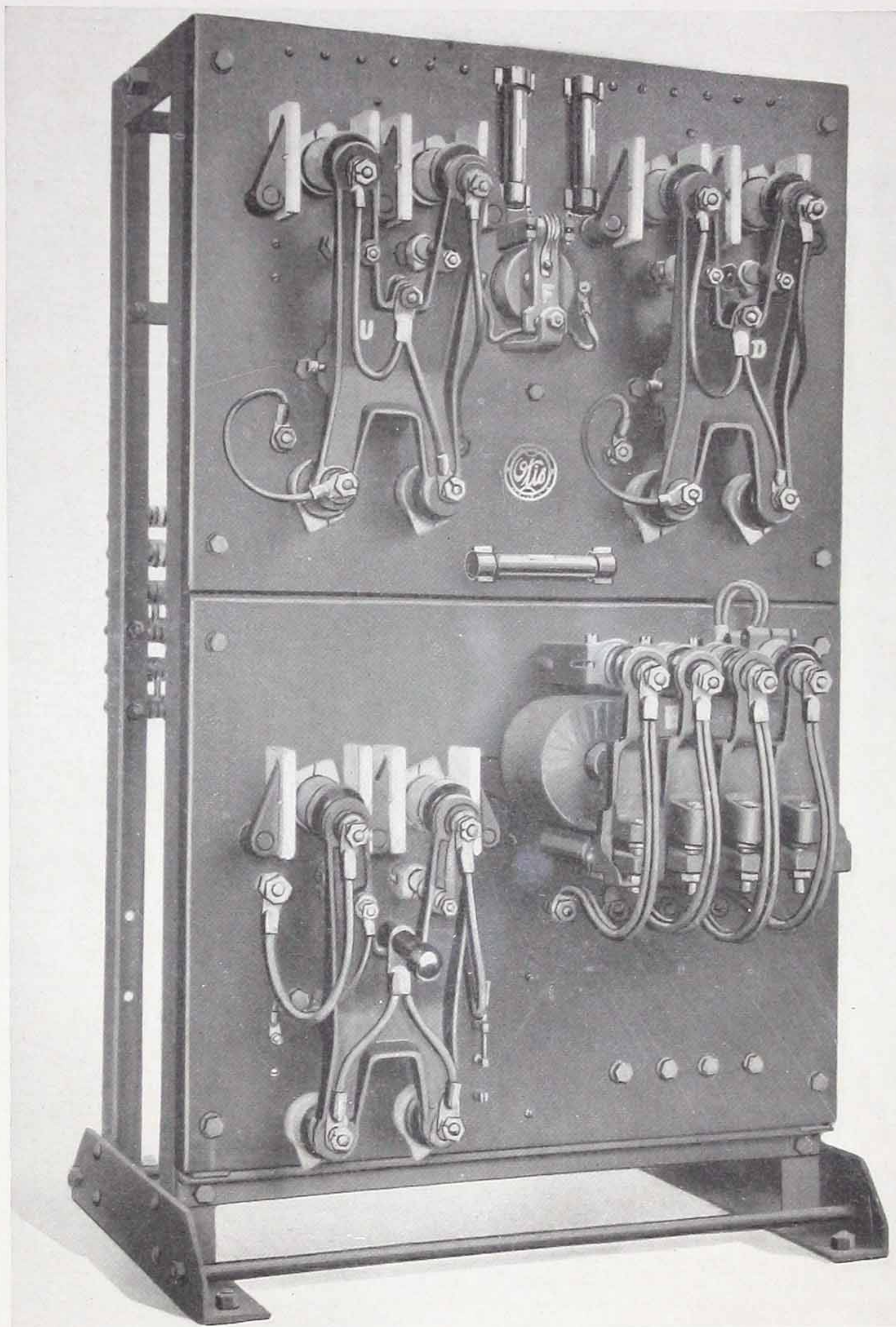
OTIS Controllers are OTIS designed and manufactured in OTIS factories. This Controller is of the Full Magnetic Type, operated by means of switch in the car and used with moderate speed elevators equipped with OTIS Direct Current Motors.

Operation is obtained by movement of switch in the car, which is electrically connected to the magnets on the controller panels to control direction of travel, acceleration and speed. The car switch is arranged to automatically return to neutral or stop position when released by the operator, and carries only small auxiliary currents, thereby eliminating arcing and burning of contacts.

Correct and smooth acceleration is attained automatically and independently of the operator by automatically cutting out starting resistance in steps as the motor accelerates to full speed, with corresponding reduction in starting current. This controller is designed to prevent damage to the motor from overload or excess current and prevent admission of more current than is necessary to perform the specified duty of the elevator. Dynamic braking effect is automatically obtained in stopping. The controller employs electro-magnets throughout, thereby eliminating the use of all rheostats, sliding contacts or other easily deranged devices.

The Electrical Safety Devices as provided with this type of controller consist of hatchway limit switches, safety switch in the car for emergency use and a switch which is actuated by the car safety device. All these safety devices are so arranged that they automatically cut off all power, apply the brake and bring the elevator to rest independently of the operator. Protective fuses are provided for operating circuits.

The Controller is made up of selected slate panels, free of metallic veins, mounted on heavy angle iron frame and thoroughly insulated. Suitable resistance is mounted on rear of controller, arranged for proper ventilation. All magnet coils are thoroughly impregnated by a special process. All switches have copper to carbon contacts of ample size, backed with cushion springs to maintain proper contact. The switches that make or break the main circuit are provided with powerful magnetic blowouts to prevent destructive arcing. Connections to switches and resistance are placed on the rear of controller panel to provide easy access. All parts are easily removable for replacement and can be readily adjusted.



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Otis Controller

FOR OTIS GEARLESS TRACTION ELEVATORS

This controller is OTIS designed and manufactured in OTIS factories and is of the *variable speed magnet control type*, operated by means of a switch in the car.

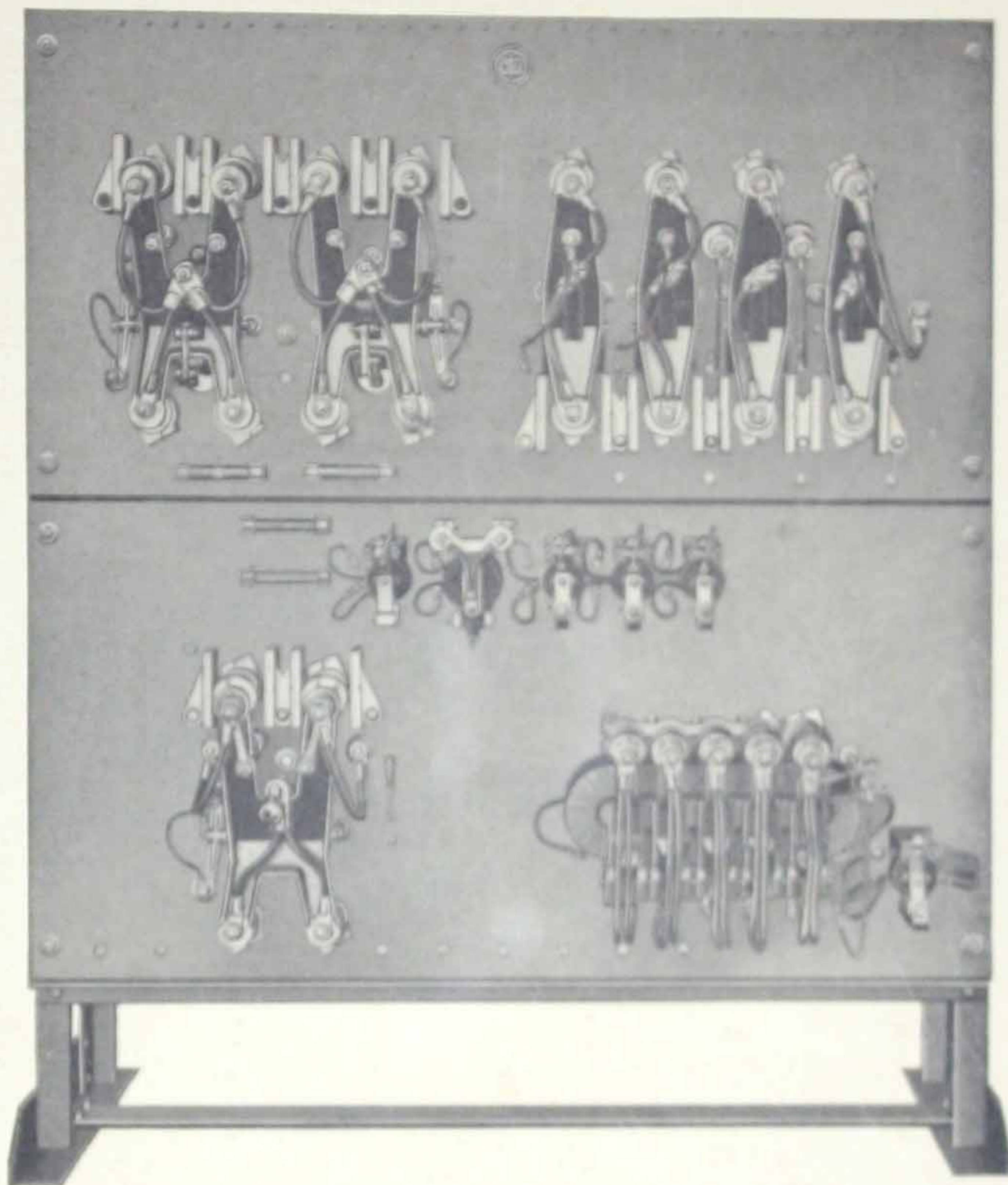
Operation is obtained by movement of the variable speed switch in the car, which is electrically connected to the magnets on the controller, thereby governing the direction of travel, acceleration, and operation of the brake. The car switch is arranged to return automatically to neutral or stop position when released by the operator. This switch carries only auxiliary currents, thereby eliminating arcing and burning of contacts.

Correct and smooth acceleration is obtained automatically and independently of the operator by cutting out starting resistance in steps. The controller is so arranged that, in starting, the current is gradually applied to the motor, and the increase of speed to maximum is obtained by reducing the field strength. In stopping, the speed is reduced by increasing the field strength and then by dynamic braking effect, which is produced prior to the final application of the brake, thus assuring a smooth and gradual stop. The motor accelerates to full speed with corresponding reduction in starting current. Correct acceleration and retardation are assured, even should the operator suddenly reverse the car switch.

The controller is designed to prevent damage to the motor from overload or excess current, and to prevent admission of more current than is necessary to perform the specified duty of the elevator. The reversing switches are interlocked so as to prevent reversal of direction until all contacts in the opposite direction have been opened. Should the brake fail, the car will be brought safely to rest.

The controller is so arranged that where hatchway door contacts are provided the car cannot be started until all doors have been closed. Should the operator move the car switch while the door is open, and then close the door, the car will not start until after the car switch has been returned to neutral or stopping position, and again moved to the operating position. This prevents starting of the car on the door contacts or interlocks.

Should a ground occur on any of the door contacts or interlocks the car cannot be operated until the condition has been remedied.



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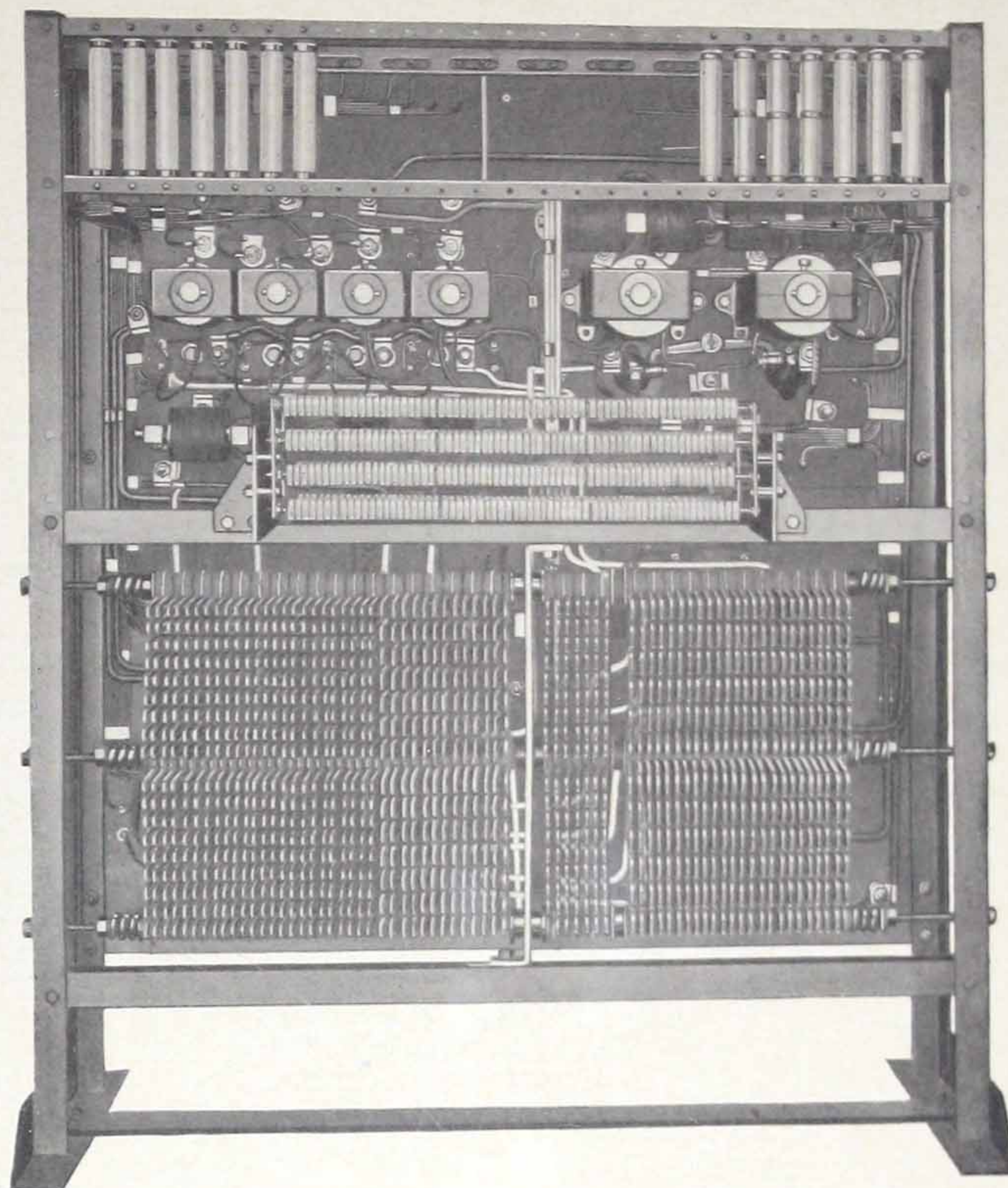


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The *electrical safety devices* provided with this type of controller consist of slow-down and stopping switches mounted on the car safety frame, final enclosed hatchway limit switches, automatic speed regulation, automatic safety magnet switch, safety switch in the car for emergency use, and a switch which is actuated by the car safety device. *All these safety devices are so arranged that in their final operation they automatically cut off all power, apply the brake and bring the elevator to rest independently of the operator.* Safety protective fuses are provided for operating circuits.

The controller is made up of selected slate panels, free of metallic veins, mounted on heavy angle iron frame and thoroughly insulated. Suitable resistance is mounted on the rear of controller, arranged for proper ventilation. All switches have copper to carbon contacts of ample size, backed with cushion springs to maintain proper contact. All magnet coils are thoroughly impregnated by a special process. The switches that make and break the main circuits are provided with powerful magnetic blowouts to prevent destructive arcing. Connections to switches and resistance are placed on the rear of the controller panels to provide easy access. All parts are easily removable for replacement and can be readily adjusted.



All exposed cast surfaces are filled and rubbed down, and will have uniform semi-gloss rubber finish. All exposed brass and copper parts are buffed and lacquered.

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Otis Controller

FOR OTIS GEARLESS TRACTION MICRO-DRIVE ELEVATORS

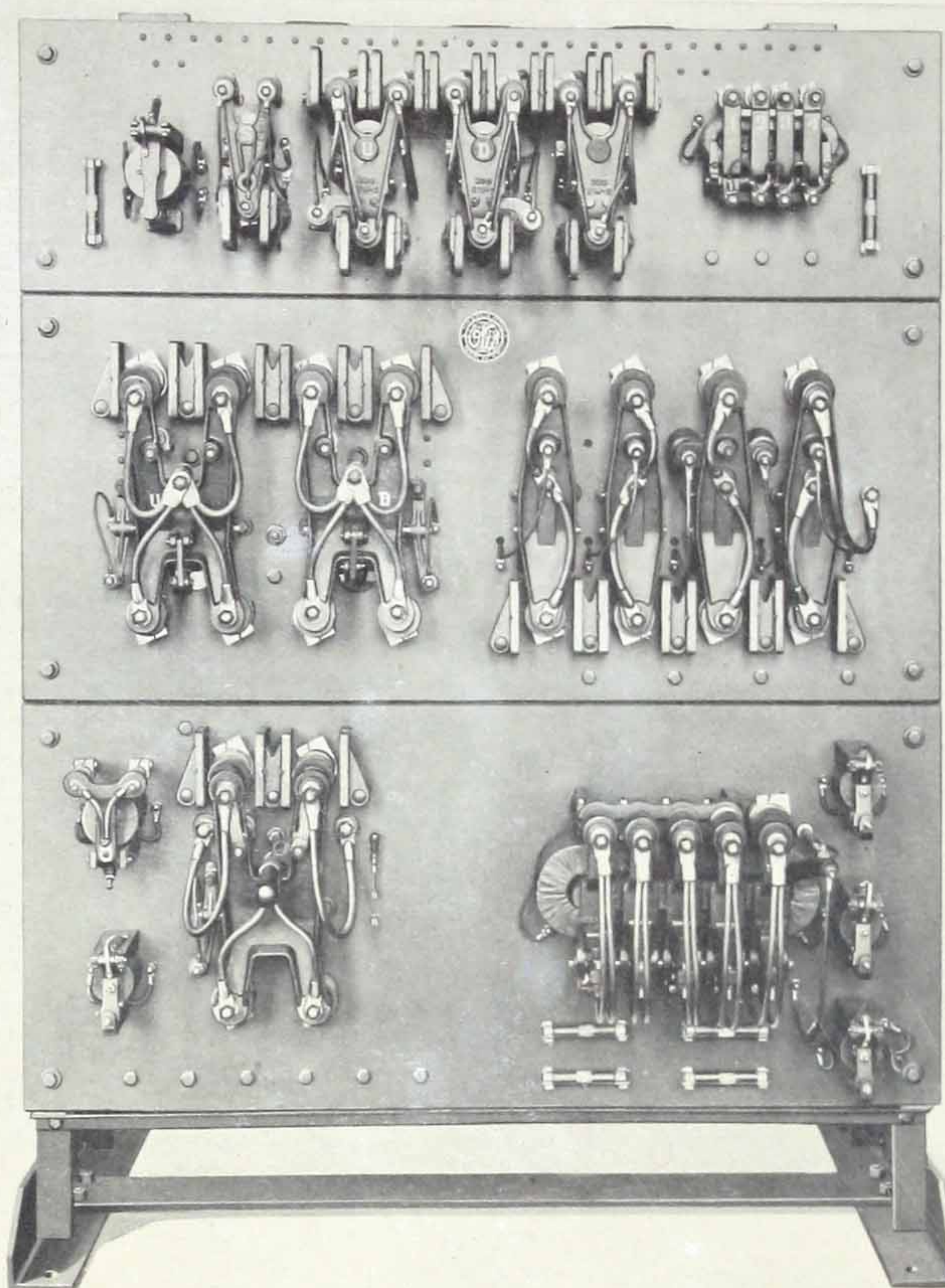
THIS controller is OTIS designed and manufactured in OTIS factories and is of the *variable speed magnet control type*, operated by means of a switch in the car.

Operation is obtained by movement of the variable speed switch in the car, which is electrically connected to the magnets on the controller, thereby governing the direction of travel, acceleration and operation of brakes. The car switch is arranged to automatically return to neutral or stop position when released by the operator. This switch carries only auxiliary currents, thereby eliminating arcing and burning of contacts.

The leveling of the car platform with the floor landing is accomplished through the operation of the controller, after the operator has centered the car switch and the car has reached the leveling zone, above or below the floor landing at which the car is to stop. This leveling operation is accomplished automatically, irrespective of load and speed, and accurate levels are maintained independently of stretch of ropes or change of load.

Correct and smooth acceleration is obtained automatically and independently of the operator by automatically cutting out starting resistance in steps. The controller is so arranged that in starting the current is gradually applied to the motor, and the increase of speed to maximum is obtained by reducing the field strength. In stopping, the speed is reduced by increasing the field strength and then by dynamic braking effect, which is produced prior to the final application of the brake, thus assuring a smooth and gradual stop. The motor accelerates to full speed with corresponding reduction in starting current. Correct acceleration and retardation are assured even should the operator suddenly reverse the car switch.

The controller is designed to prevent damage to the motor from overload or excess current, and to prevent admission of more current than is necessary to perform



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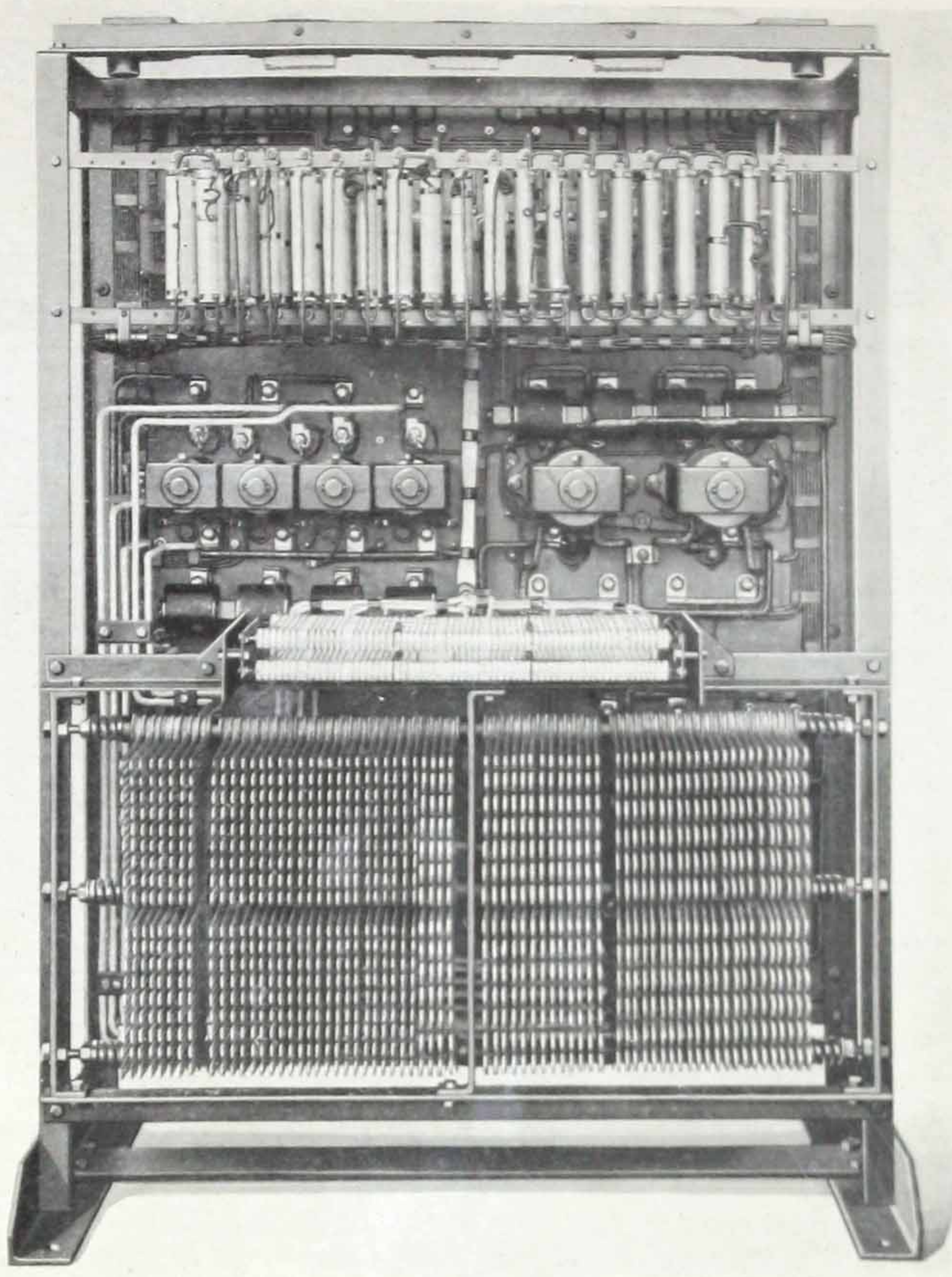
the specified duty of the elevator. The reversing switches are interlocked so as to prevent reversal of direction until all contacts in the opposite direction have been opened. Should the main brake fail, the car will be brought safely to rest.

The controller is arranged for emergency operation by the leveling motor, by means of an *up and down emergency switch* in the car, which also provides for automatic leveling of the car platform as under normal operation.

The *electrical safety devices* as provided with this type of controller consist of slow down and stopping switches mounted on the car safety frame, final enclosed hatchway limit switches, automatic speed regulation, automatic safety magnet switch, safety switch in the car for emergency use, and a switch which is actuated by the car safety device. *All these safety devices are so arranged that in their final operation they automatically cut off all power, apply the brake and bring the elevator to rest independently of the operator.* Safety protective fuses are provided for operating circuits.

The controller is made up of selected slate panels, free of metallic veins, mounted on heavy angle iron frame and thoroughly insulated. Suitable resistance is mounted on the rear of controller, arranged for proper ventilation. All switches have copper to carbon contacts of ample size, backed with cushion springs to maintain proper contact. All magnet coils are thoroughly impregnated by a special process. The switches that make and break the main circuits are provided with powerful magnetic blowouts to prevent destructive arcing. Connections to switches and resistance are placed on the rear of the controller panels to provide easy access. All parts are easily removable for replacement and can be readily adjusted.

All exposed cast surfaces are filled and rubbed down, and will have uniform semi-gloss rubber finish. All exposed brass and copper parts are buffed and lacquered.



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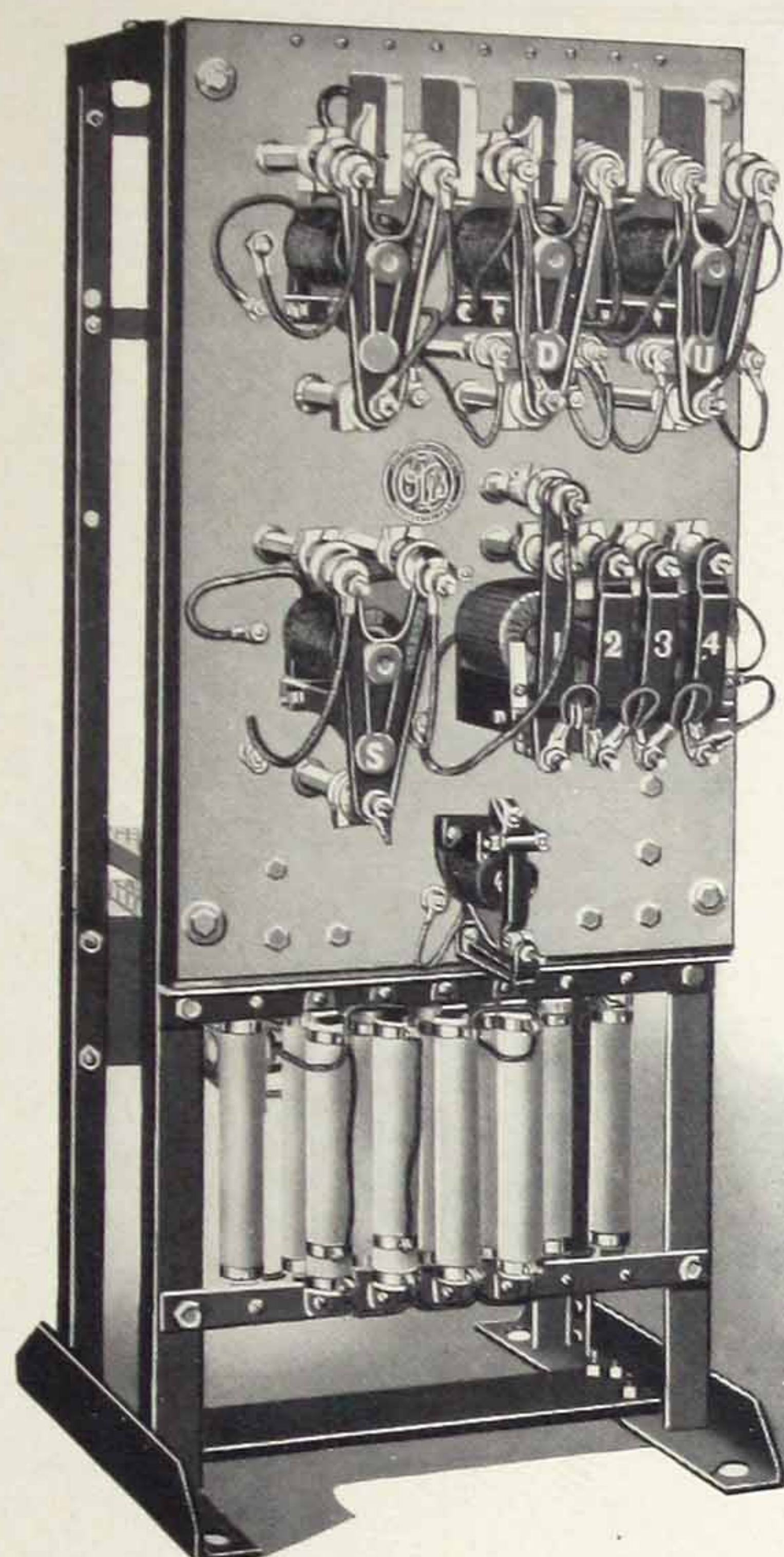


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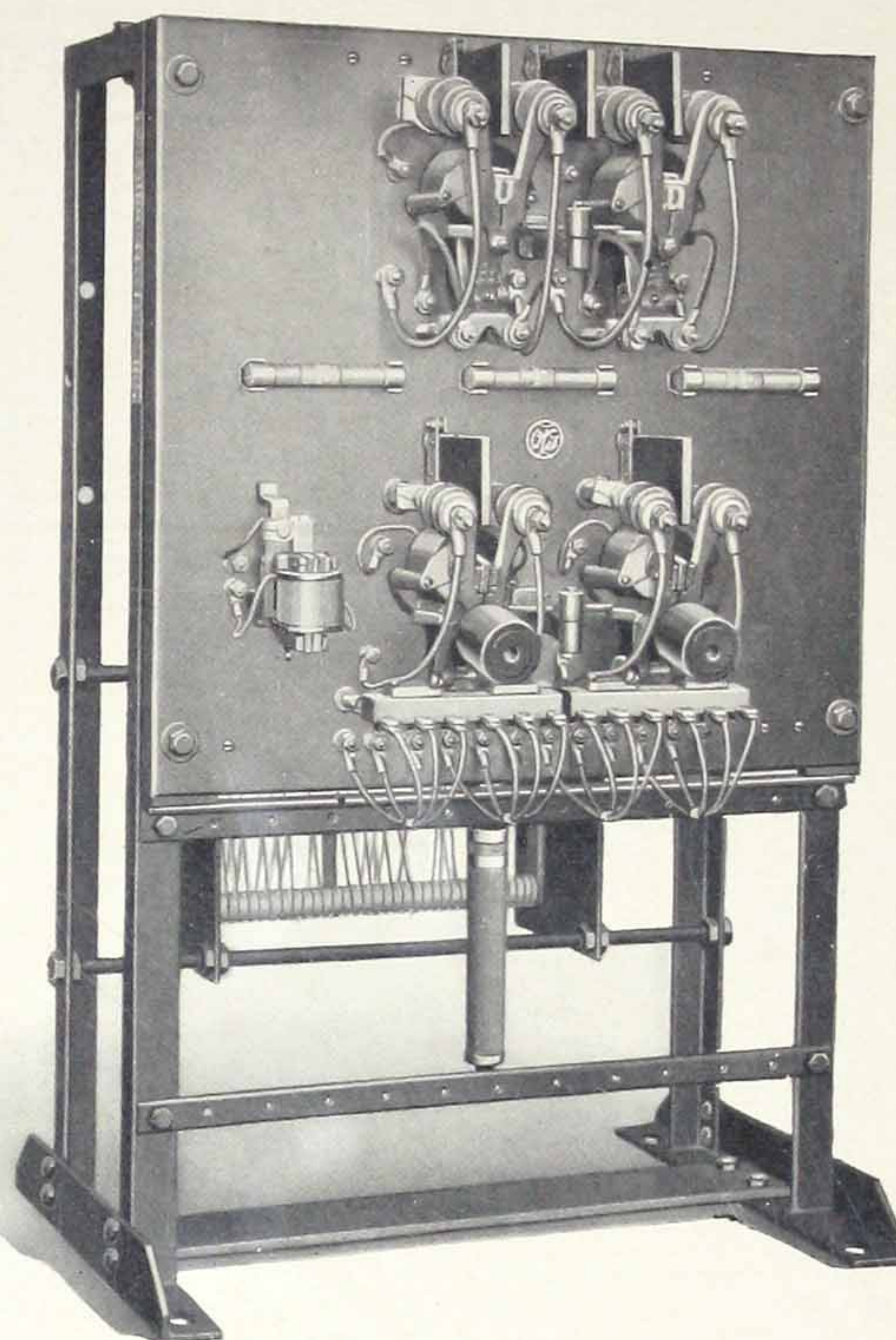


Otis Micro-Drive Controller

Car Switch or Push Button Operation
(Single Wrap Traction Machines)



DIRECT CURRENT CONTROLLER



ALTERNATING CURRENT CONTROLLER

OTIS Micro-Drive Controllers are Otis designed and manufactured in Otis factories. This Controller is of the Full Magnetic Micro-Drive Type, operated through the leveling switch on the car, and is used in connection with the main controller on Otis Single Wrap Traction Micro-Drive elevator machines.

When the car arrives within the leveling zone above or below the floor landing at which the car is to stop, the main motor and controller are automatically cut out of service, and the self-leveling motor and controller automatically operate the machine, through the leveling switch, until the car is exactly at the floor level. This is accomplished by means of the leveling switch on the car which engages the up or down leveling cam in the hatchway. The position of the leveling switch in relation to the up and down leveling cam governs the direction of travel of the car while leveling.

When the leveling switch reaches the neutral position, the power is cut off, the brakes applied, and the car is brought to rest level with the floor landing.

The leveling operation is entirely independent of the operator and is accomplished automatically by the car itself when within the leveling zone.

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After the car has been leveled, the position of the car platform will be automatically maintained regardless of any change in load on the platform, or stretch of ropes.

The change from main drive to micro-drive operation is accomplished smoothly, even if the leveling operation requires a reversal in the direction of car travel when leveling to the floor landing.

This controller is designed to prevent damage to the leveling motor from overload or excess current, and to prevent the admission of more current than is necessary to perform the specified duty of the elevator. Smooth and correct acceleration of the leveling motor is automatically obtained. The controller employs electro-magnets throughout, thereby eliminating the use of all rheostats, sliding contacts, or other easily deranged devices. Protective fuses are provided for operating circuits.

The various electrical safety devices which operate in connection with the main controller are also operative through this controller during the leveling operation.

The Controller is made up of selected slate panels, free of metallic veins, mounted on heavy angle iron frame and thoroughly insulated. Suitable resistance is mounted on rear of controller, arranged for proper ventilation. All magnet coils are thoroughly impregnated by a special process. All switches have copper to carbon contacts of ample size, backed with cushion springs to maintain proper contact. Connections to switches and resistance are placed on the rear of controller panel to provide easy access. All parts are easily removable for replacement and can be readily adjusted.

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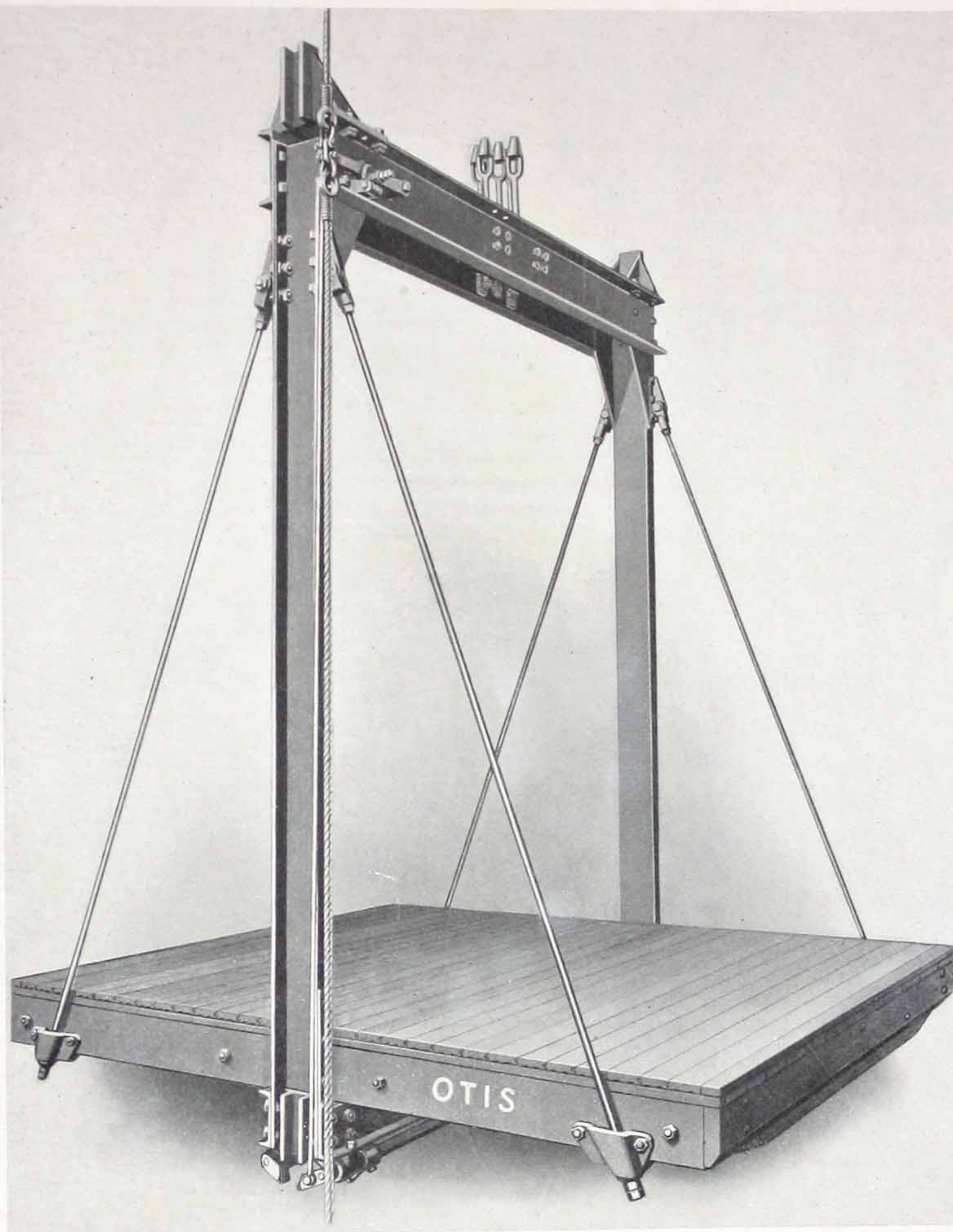
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Car Platform and Safety

The Car Safety Frame is made of steel securely bolted and riveted together, to which the lifting cables are attached by means of adjustable spring hitches, thereby equalizing the strains on the cables and greatly relieving the car frame of stresses due to stopping and starting. Substantial guide shoes are mounted on the car frame, and so adjusted as to secure smooth running. The car platform is strongly built with a steel frame provided with wood floor and securely braced to the safety frame.

The car safety device is mounted underneath the car platform and is connected by means of a rope to an Otis centrifugal speed governor at the top of hatchway. In case the car attains excessive descending speed, the governor is tripped and grips the rope, which in turn causes the safety jaws to grip both sides of the wood guides, thereby preventing further descent of the car.



Counterbalance

The elevator is provided with a counterweight which consists of heavy cast iron weight sections properly secured and running in wood guides and so proportioned as to secure smooth and economical operation.

Guide Posts and Guides

The car and counterweight are arranged to be guided by wood guides. The guide posts are made of well seasoned selected hard pine of compound section with spliced joints, and are securely fastened to elevator hatchway. The guides are of kilndried selected maple of uniform section, with planed surfaces and tongued and grooved ends, to insure smooth running. They are securely fastened to the posts by heavy wood screws.

Buffers

Otis Buffers are provided in the pit for both car and counterweight as protection in case of overtravel.

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Car Platform and Safety

The Car Safety Frame is made of steel securely bolted and riveted together, to which the lifting cables are attached by means of adjustable spring hitches, thereby equalizing the strains on the cables and greatly relieving the car frame of stresses due to starting and stopping. Adjustable guide shoes are mounted on the car frame to secure smooth running. The car platform is strongly built with a steel frame provided with wood floor and securely braced to the safety frame.

The car safety device is mounted underneath the car platform and is connected by means of a rope to an Otis centrifugal speed governor at the top of hatchway. In case the car attains excessive descending speed, the governor is tripped and grips the cable, which in turn causes the rolls to engage the guides and prevent further descent of the car.

Counterbalance

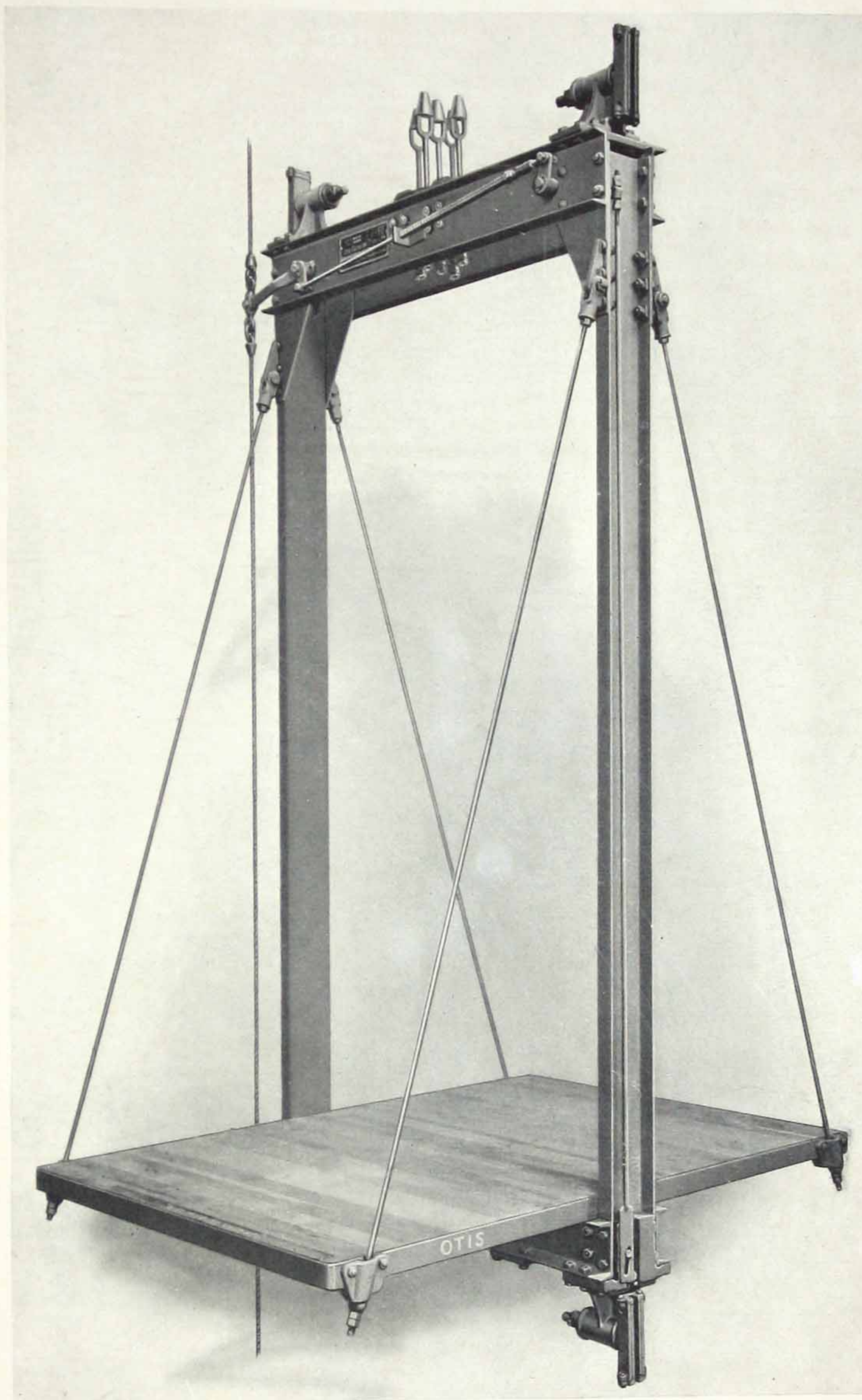
The elevator is provided with a counterweight which consists of heavy cast iron weight sections properly secured and running in steel guides and so proportioned as to secure smooth and economical operation.

Guide Rails

The car and counterweight are arranged to be guided by steel tees. The guides are securely fastened to the elevator hatchway and are of special heavy section with planed surfaces and having the ends tongued and grooved to form matched joints, thereby providing perfect alignment and smooth running.

Buffers

Otis Buffers are provided in the pit for both car and counterweight as protection in case of overtravel.



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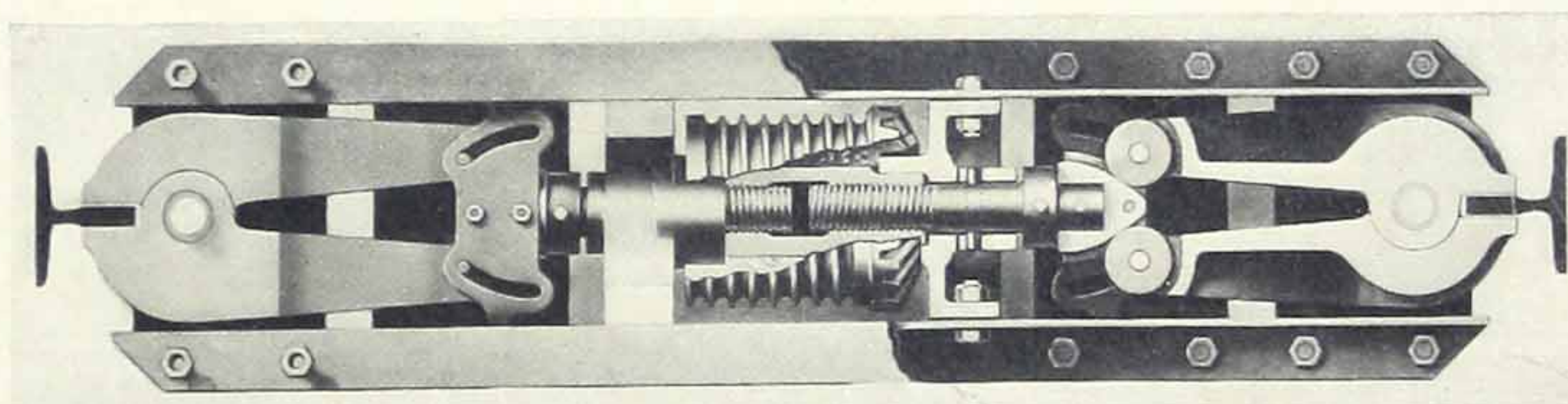
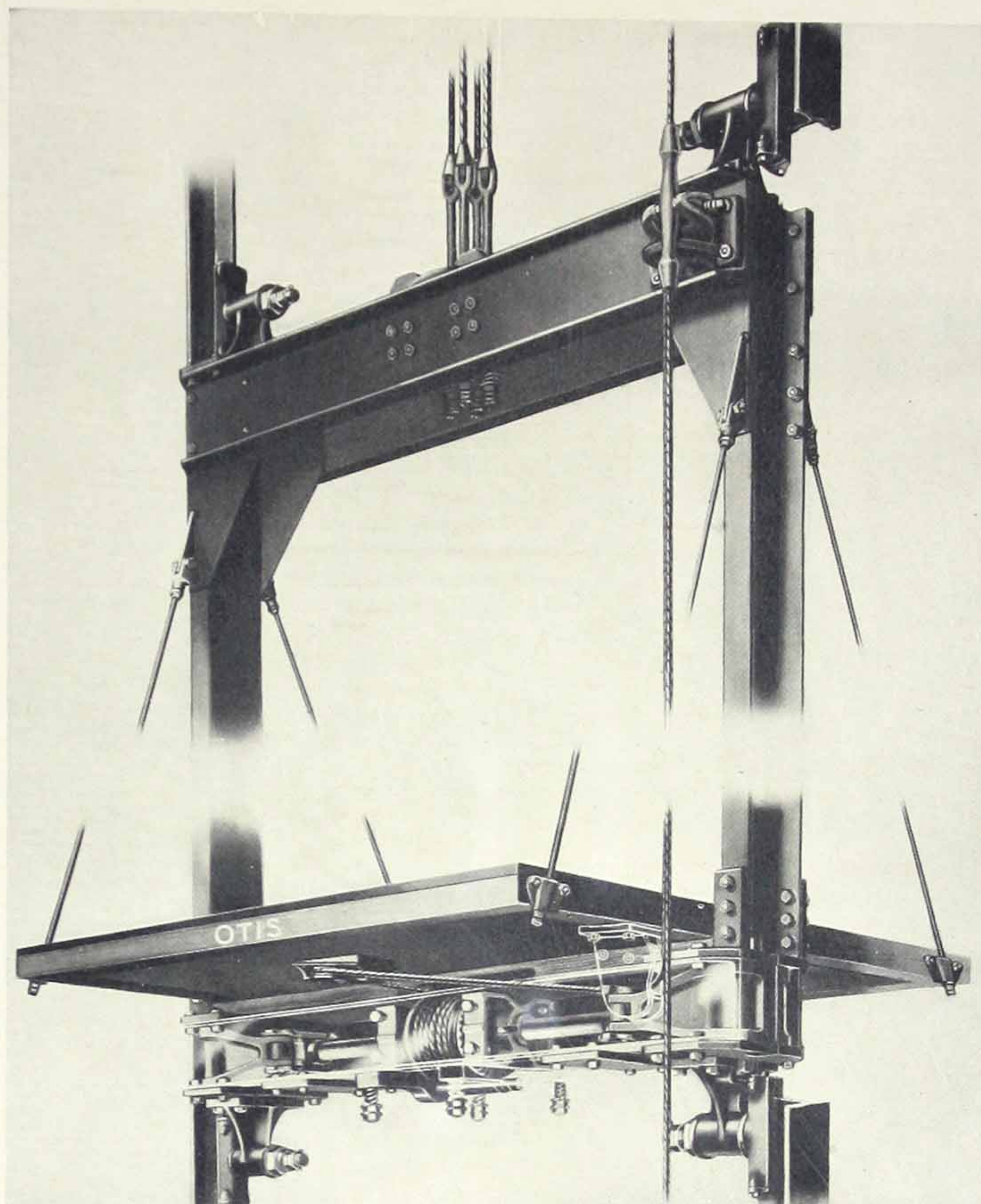


Car Platform and Safety

The Car Safety Frame is made of steel securely bolted and riveted together, to which the lifting cables are attached by means of adjustable spring hitches, thereby equalizing the strains on the cables and greatly relieving the car frame of stresses due to starting and stopping. Spring adjusting self-aligning guide shoes are mounted on the car frame to secure smooth running. The car platform is strongly built with a steel frame provided with wood floor and securely braced to the safety frame.

The car safety device is mounted underneath the car platform and is connected by means of a rope to an Otis centrifugal speed governor at the top of hatchway. In case the car attains excessive descending speed, the governor is tripped and grips the rope, which in turn actuates a drum mounted in the safety frame.

The revolving of the drum operates right and left hand screws, which force wedges between the guide clamps, causing heavy steel jaws to gradually grip the guide rails and bring the car to a smooth and gradual stop.



Counterbalance

The car is arranged for a counterbalance, which consists of heavy cast iron counterweight sections, properly secured and running in steel guides and so proportioned as to secure smooth and economical operation.

Guide Rails

The car and counterweight are arranged to be guided by steel tees. The guides are securely fastened to the elevator hatchway and are of special heavy section with planed surfaces and having the ends tongued and grooved to form matched joints, thereby providing perfect alignment and smooth running.

Buffers

Otis Buffers are provided in the pit for both car and counterweight as protection in case of overtravel.

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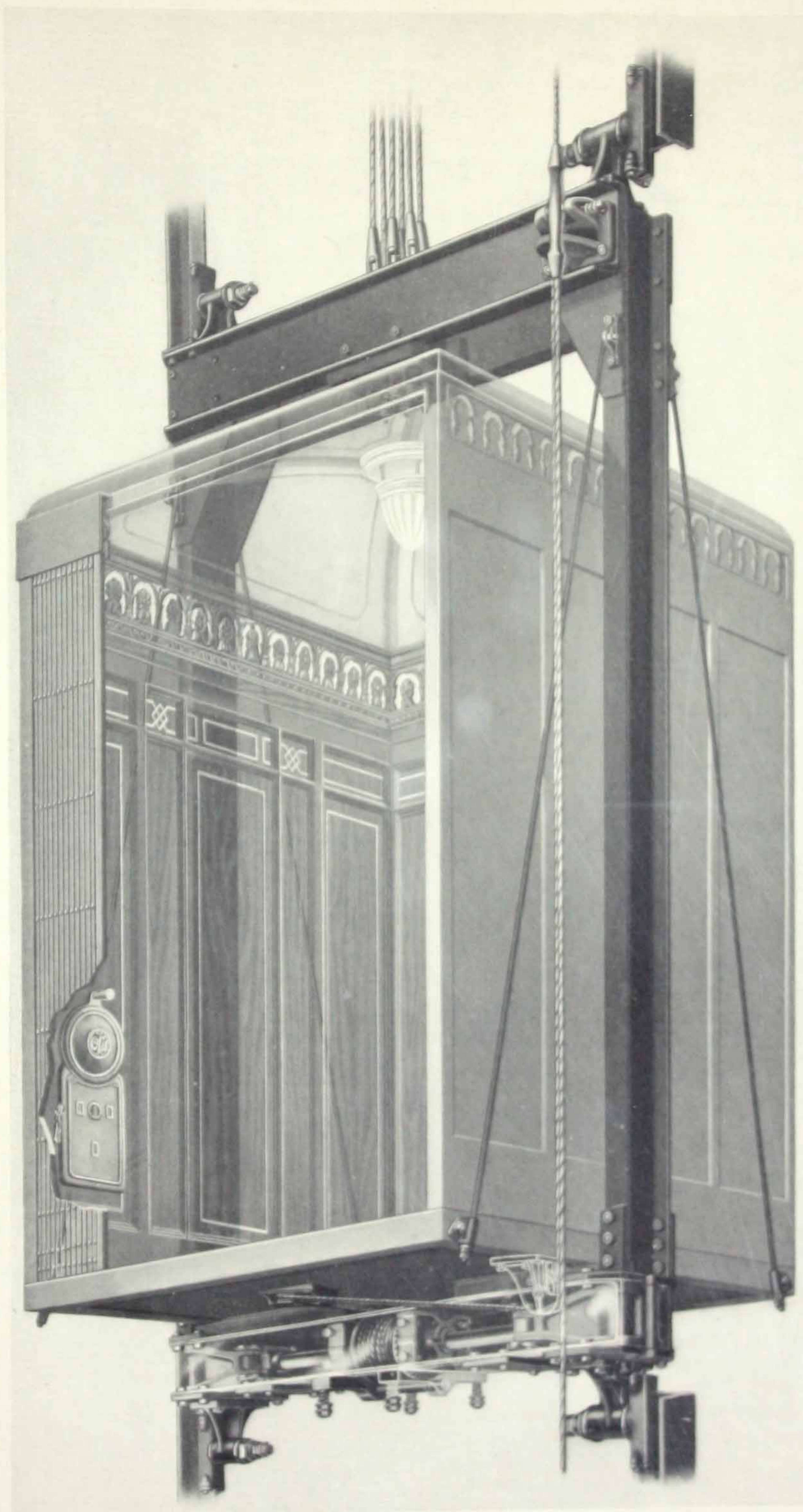


Safety Frame and Car Platform

THE *Car Safety Frame* is made of structural steel securely bolted and riveted together, to which the hoisting ropes are attached by means of self adjusting hitches, which provide means for equalizing the strains on the ropes and relieving them of undue twisting strains. Spring adjusting, self-aligning guide shoes are mounted on the car-frame to secure smooth running. The car platform is strongly built with a steel frame, securely braced to the safety frame, and having a selected well seasoned wood floor, fireproofed on the under side with sheet metal and the upper surface finished with tile or other floor covering.

An *OTIS Car Safety Device* of the most efficient type is mounted underneath the car platform on the safety frame, and is operated by means of an *OTIS Centrifugal Speed Governor* at the top of the hatchway.

In case of emergency, due to parting



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of the ropes, the governor will be tripped, and grip the governor rope, which in turn actuates a drum mounted in the safety frame. The revolving of this drum operates right and left hand screws, which force wedges between the guide clamps, causing heavy steel safety jaws to gradually grip the guide rails and bring the car to a smooth and gradual stop. Prior to the operation of the safety device, the governor will cause all power to be cut off from the motor, the brake will be applied and the machine stopped.

COUNTERBALANCE

THE elevator is to be suitably counterbalanced for smooth and economical operation. The counterweight consists of heavy cast iron sections, contained in a structural steel frame provided with adjustable guide shoes. The weights are properly secured by means of tie rods.

GUIDE RAILS

THE car and counterweight are guided by steel tees, which are securely fastened to the framing of the hatchway. The guides are of special heavy section, with planed surfaces, and having the ends tongued and grooved to form matched joints, thereby providing perfect alignment and smooth running.

OIL CUSHION TERMINAL BUFFERS

OTIS *Oil Cushion Buffers* are provided as a means of bringing the car and counterweight to a gradual and positive stop at the extreme limits of travel beyond the terminal landings, should the car for any reason run by the final limit switches.

The operation of either buffer causes a displacement of oil from one chamber of the buffer to another, through graduated openings, carefully calculated, and designed to obtain a uniform rate of retardation of car or counterweight and produce a gradual and positive stop.

The Buffers *automatically reset* for further action when the car resumes operation.

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Otis Service

The supremacy of Otis Elevators—in safety, in design and in operating qualities—has been for many years, and is today, universally acknowledged.

Considered from the standpoint of elevator apparatus generally, Otis Elevators are conceded to need the least amount of mechanical attention. But like any piece of good machinery, they do need proper care and systematic attention if they are to be kept up to their highest operating efficiency.

Recognizing its obligation to provide facilities for this care and for the expert attention for all types of its elevators everywhere, the Otis Elevator Company some years ago began to establish its own service offices throughout the world. There are now over one hundred and sixty such offices located in the United States alone, each office carrying in stock all necessary elevator accessories, supplies and parts, ready for immediate shipment.

At these offices one or more factory-trained experts are stationed—men who are thoroughly familiar with elevator construction and operation; and continuous telephone service is maintained in order that these Service men may be reached promptly, at any hour of the day or night, or on Sundays and Holidays.

Service can be arranged for with these offices at nominal rates under standard contracts as follows:

WEEKLY SERVICE WITH PARTS, OILS AND GREASES

This service to consist of a weekly examination of the elevator, excepting signal devices, including oiling and cleaning machine, motor and controller; greasing or oiling bearings and guides; necessary minor adjustments; call back service during regular working hours of regular working days; and furnishing the following specified supplies: All carbon and copper contacts, contact insulations and contact springs, motor brushes, copper braids, oils, greases, rope preservative and cotton waste.

WEEKLY SERVICE

This service to consist of a weekly examination of the elevator, excepting signal devices, including oiling and cleaning machine, motor and controller; greasing or oiling bearings and guides; necessary minor adjustments; and call back service during regular working hours of regular working days.

Full details of this service will be gladly furnished by nearest office.

As a means of identification and to eliminate any possibility of impostors gaining entrance to buildings under our name, we have supplied our examiners with badges as shown below.



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Veeder

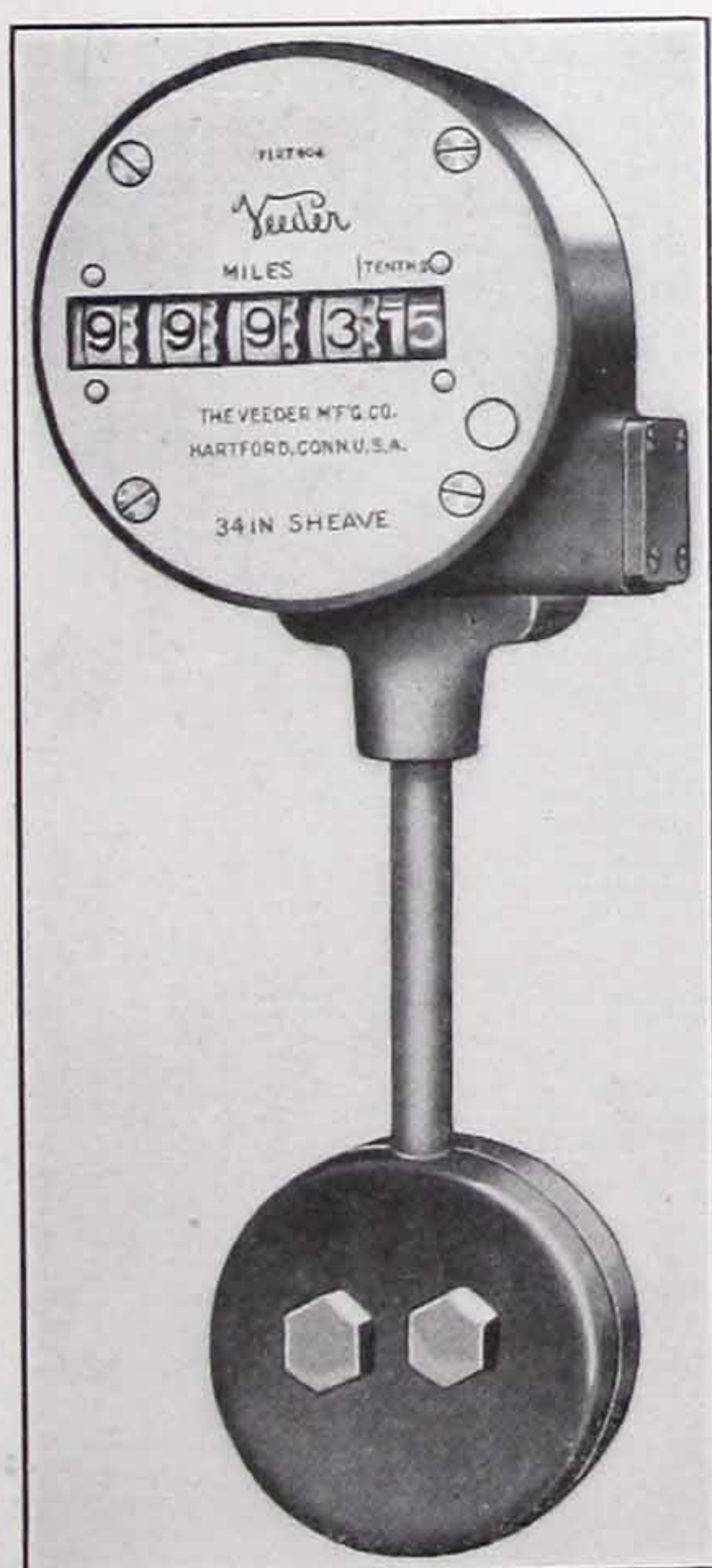
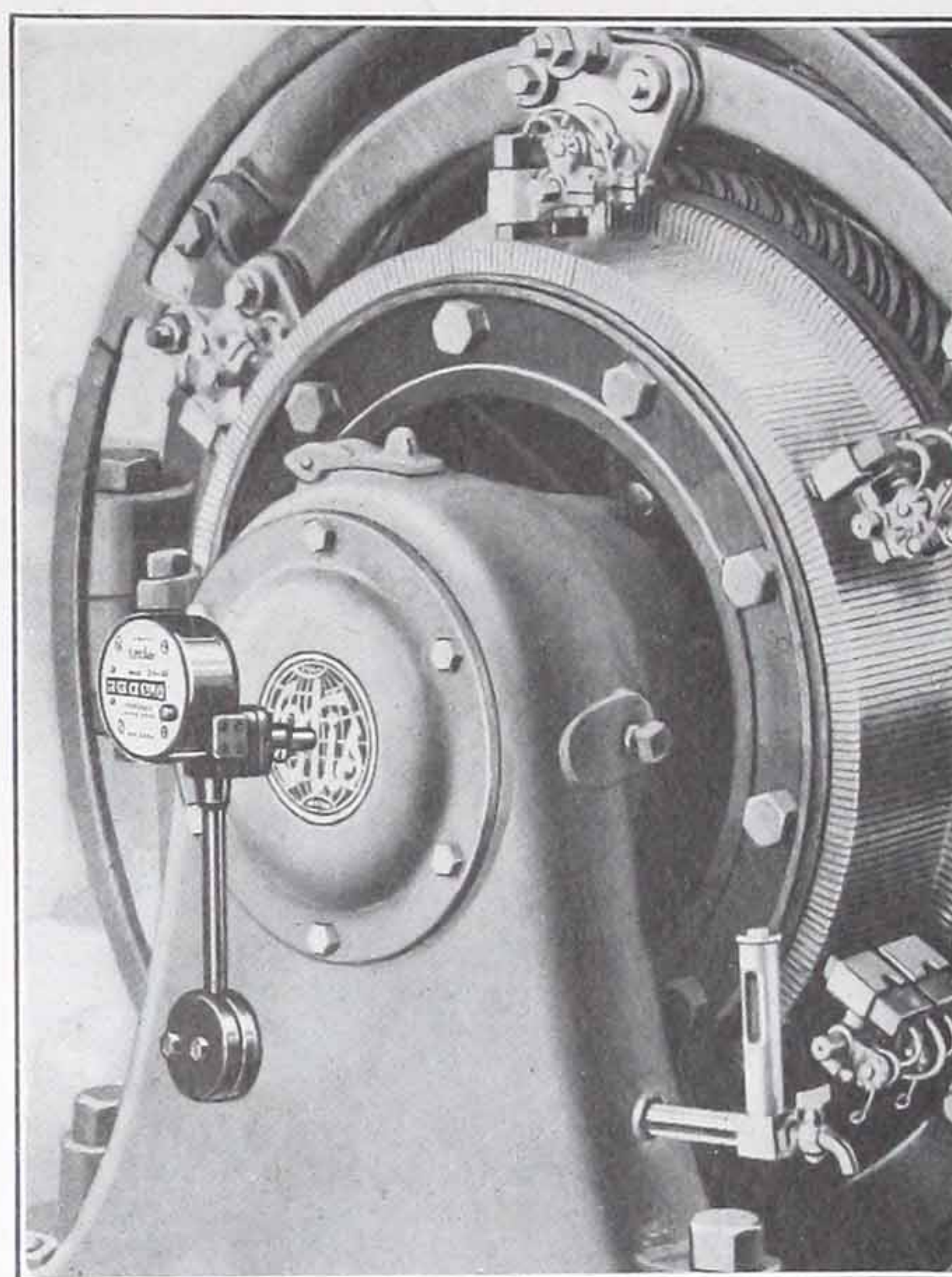
Elevator Mileage Recorder

DISTRIBUTED BY
OTIS ELEVATOR COMPANY

The Veeder Elevator Mileage Recorder is used for the purpose of determining the mileage, and consequently the cost per mile, of elevator operation, also the length of life and mileage of the elevator ropes. The record is made continuously, whether the elevator travels "up" or "down".

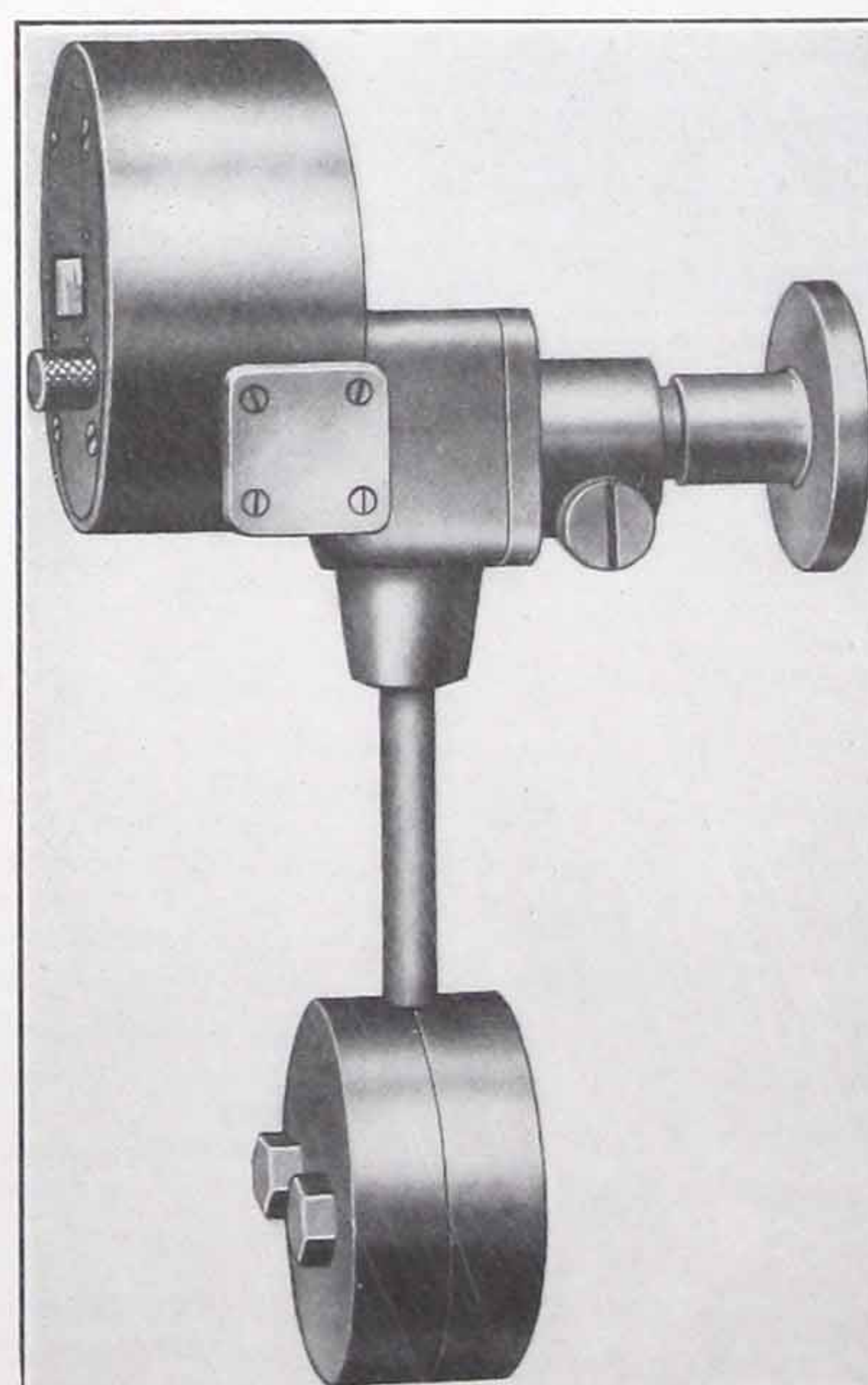
The cost per mile may be easily determined by dividing the operating cost by the mileage. With the data thus obtained, suggestions may be made for reducing the current consumption and maintenance. Since this Recorder will show at all times the mileage of the elevator and the approximate life of the elevator ropes, its use will enable operators to anticipate the time when replacements will be needed and to plan advantageously for their installation. Such knowledge will obviate costly shut-downs and will maintain maximum elevator service.

The Recorder may be readily attached to the shaft of the driving sheave or drum, whether the end of the shaft is exposed or covered. The instrument is direct reading, no constants being necessary. The two piece driving stud makes it easy to attach the Recorder. The flanged part is detachable for use as a template in locating the three 1/4 inch tapped holes on the end of the shaft to which it is to be attached. A pin projects from the center of the flange for first centering the flange on the shaft. For shafts having covered ends, a one inch diameter hole should be drilled in the cover plate.



When ordering state:

1. Nominal diameter of sheave or drum (i. e. diameter center to center of rope); or if this is not available, then, the feet of elevator travel for 10 revolutions of sheave or drum.
2. Distance from end of shaft to outside of cover plate, in cases where the ends are covered.



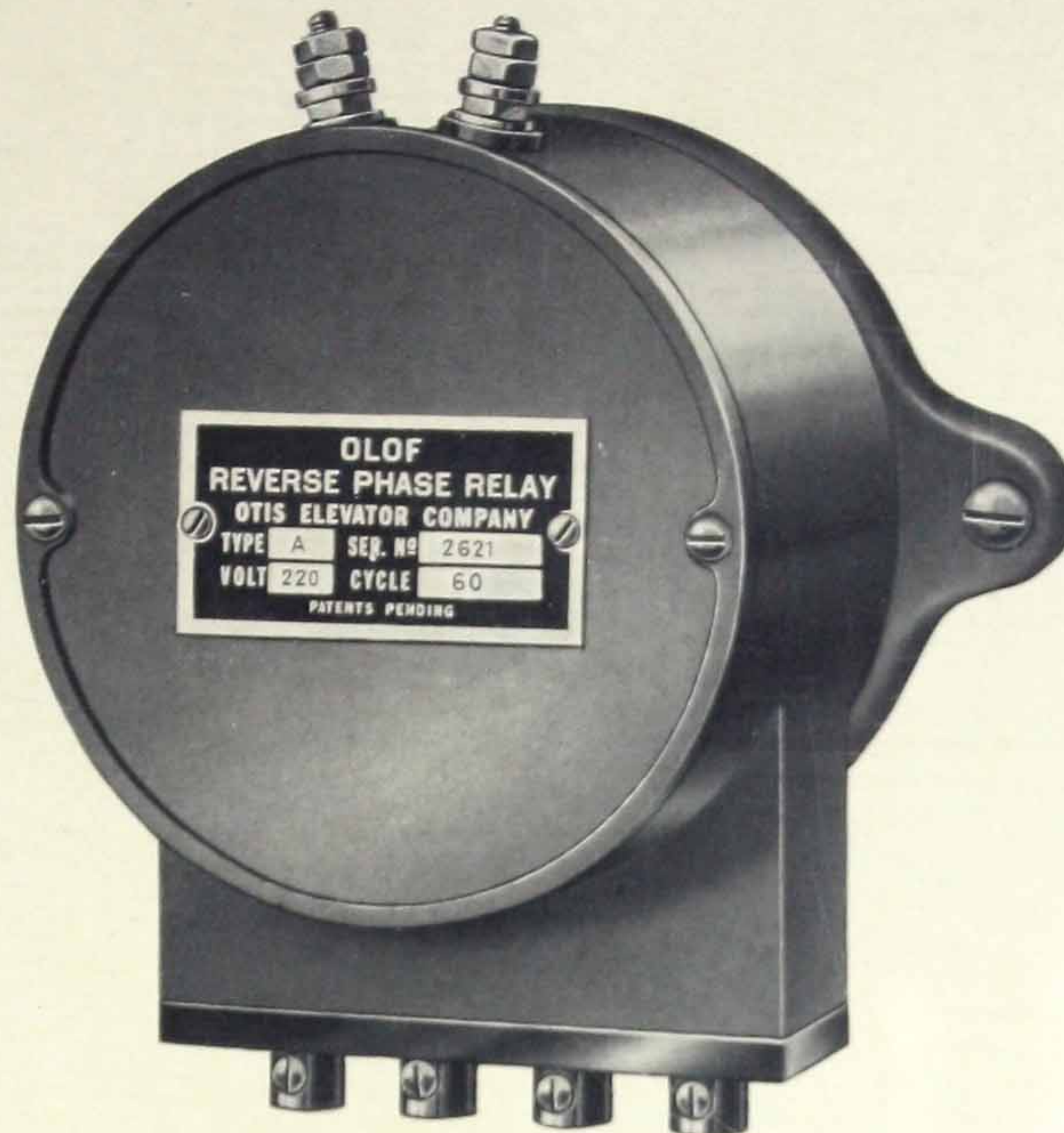
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Otis Reverse Phase Relay



The Otis Reverse Phase Relay is designed to protect elevator motors against Phase Reversal, Low Voltage, and Phase Failure.

Phase Reversal causes the motor to rotate in the opposite direction to that intended by the operator, and is produced when the supply lines to the motor are interchanged, either in the power house or by line men when making repairs.

Low Voltage may cause the motor to stall and possibly burn out, when lifting heavy loads. It may also cause increased speed when lowering heavy loads or when raising light loads, and is produced in the power house or by overloads on the supply lines.

Phase Failure, which is produced by open circuits, increases the amount of current passing into the motor and is liable to burn it out.

The principle of operation of the Otis Reverse Phase Relay is that of an induction motor, the metal disc acting as a rotor. The relay contact is opened or closed by motion of the disc, and is kept closed by the operating coils as long as the different phases maintain their proper relation.

Should Phase Reversal occur, the rotor of the relay will turn in the opposite direction, thereby opening the relay contacts, which in turn cut off all current supply to the motor.

Should Low Voltage occur, the torque of the relay will be reduced so that it will be unable to keep the contacts in a closed position. They will then open and cut off all current supply to the motor.

Should Phase Failure occur while the motor is not running, the relay loses all torque and cannot keep the contacts in a closed position; they will then open and cut off all current supply to the motor.

Should Phase Failure occur after the motor is started, the relay contacts remain closed, allowing the elevator to travel to its designated floor. (Otis motors have sufficient torque when running on single phase to complete the trip of the elevator without damage to the motor.) Phase Failure, however, must be remedied before the elevator can again be started.

The Otis Reverse Phase Relay is of compact design, enclosed in a neat dust-proof metal case, and is easily mounted. It has only a few parts, all of which are of substantial construction and designed to maintain their adjustment. The Relay is designed for constant service and low power consumption, and consumes only about 6 watts per phase.

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The Map tells the Story

How Otis Day *and* Night Service Reaches Its Customers

178 Service Offices
of the
Otis Elevator Company

Otis Service Offices are so located throughout the Country that service can be rendered promptly to any elevator no matter where situated.

This assurance of Otis Service after installation is an important factor to be considered in the purchase of new elevators, as the availability of such service is as important as the high quality of the original installation.

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LIST OF OTIS OFFICES

NORTH AMERICA (Outside United States)

CANADA

OTIS-FENSOM ELEVATOR COMPANY, LTD.

Head Office—Toronto, Ont.

Calgary, Alberta
Edmonton, Alberta
Halifax, Nova Scotia
Hamilton, Ont.

London, Ont.
Montreal, P. Q.
Ottawa, Ont.
Quebec, P. Q.

Regina, Saskatchewan
Toronto, Ont.
Vancouver, B. C.
Victoria, B. C.

Windsor, Ont.
Winnipeg, Manitoba

Factory—Hamilton, Ont.

CUBA

Zaldo, Martinez & Co.
Havana

NEW FOUNDLAND

R. G. Ash & Company
St. Johns

PORTO RICO

Union Commercial Corp.
San Juan

MEXICO

Hubard & Bournal
Mexico City

PANAMA

American Trade Developing Co.
Panama

SOUTH AMERICA

ARGENTINE

Otis Elevator Company
Buenos Aires
Rosario de Santa Fe

CHILE

Raab, Bellet & Company
Santiago

URUGUAY

Otis Elevator Company
Montevideo

BRAZIL

Middletown Car Company
Rio de Janeiro
Sao Paulo

COLOMBIA

Wesselhoeft & Poor
Barranquilla

VENEZUELA

Wesselhoeft & Poor
Caracas

PERU

Luis G. Ostalaza
Lima

EUROPE

BELGIUM

Compagnie Belge des
Ascenseurs Otis
Brussels Liège
Antwerp Jumet
Ostend Ghent

GERMANY

Otis Augsburger Werke Gesellschaft, m.b.H.
Main Office & Factory
Wittenau, Berlin
Cologne
Hamburg

POLAND

Chr. Brun & Son
Warsaw

FRANCE

Ateliers Otis-Pifre
Paris
Nice
Lyon
Marseille

GREECE

Xanthopoulides & Company
Athens

SWITZERLAND

Otis Elevator Company
Wädenswil

HOLLAND

Fred Stieltjes & Company
Amsterdam

SPAIN & PORTUGAL

Cia. Electro Mecanica Iberica
Madrid

UNITED KINGDOM

WAYGOOD-OTIS, LTD.

Head Office—London, England

Birmingham
Bournemouth
Brighton
Bristol

Canterbury
Cardiff
Belfast
Dublin

Glasgow
Leeds
Leicester
Liverpool

London
Manchester
Newcastle
Nottingham
Plymouth

Factory—London, England

ASIA

CHINA

American Trading Co.
Shanghai

INDIA & THE FAR EAST

Turner Hoare & Company, Bombay
Walker-Sons & Co., Ltd., Colombo
Balmer Lawrie & Co., Calcutta
Bullock Bros. & Co., Ltd., Rangoon
Central Engine Works, Ltd., Singapore
Dodwell & Co., Ltd., Hong Kong

JAPAN

American Trading Co.
Tokio
Kobe

HOLLAND EAST COLONIES

Fred Stieltjes & Co.
Soerabaja, Java

PHILIPPINE ISLANDS

Cotton, Neill Engine &
Machine Company
Manila

AFRICA

WAYGOOD-OTIS (SOUTH AFRICA), LTD.

Durban

Johannesburg

Cape Town